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Youth's Perception of Storytelling in Pharmaceutical Campaigns

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Andrei Androsov

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1. Introduction

Health is one of the most important keys to a long and fulfilling life, and throughout all human experience the need to protect and promote it transcends all boundaries (World Health Organization [WHO], n.d.). For youth, for the generation who has a long and promising journey ahead, understanding the importance of maintaining good health is absolutely crucial (Sawyer et al., 2012). By shaping narratives of well-being into stories that resonate with young people, we empower youth to embrace health not only as a personal responsibility but as a shared responsibility for building a strong, healthy and happy society (East et al., 2010). Building health communication that involves young people leads to the foundation for generations who perceive health not as a must but as a path that carries profound implications for families, communities, and societies worldwide (Ferretti et al., 2023; Rath et al., 2021).

Various studies highlight that young people perceive health topics better when supported with relatable narratives rather than straightforward factual content because of media consumption through visually rich, story-driven platforms (Green & Brock, 2000; Fisher, 1984). Storytelling provides a unique opportunity for pharmaceutical campaigns to reach the young audience, leveraging narratives to improve both understanding and recall of important health information (Hinyard & Kreuter, 2007). As Fisher (1984, p. 6) claims, “humans are storytelling animals,” and narrative-based communication is able to build a meaningful and effective connection with audiences, making it a working approach for health campaigns for young people.

The relevance of storytelling in healthcare can be explained through several behavioural theories. For example, Social Cognitive Theory (SCT) highlights the impact of learning through observations and of social influence in growing particular attitudes and behaviors (Bandura, 1986). Social appreciation, peer behaviours, lifestyles and decisions especially influence youth, and storytelling with relevant plot can effectively promote desired health behaviors, increasing the chance of adopting these behaviours by young viewers (McAlister et al., 2008). The Theory of Planned Behavior (TPB) is relevant for the storytelling too as it claims that individuals are very attentive to strong social norms, positive attitudes, and a sense of control over the behavior, so the chance of action increases in this case. Story-driven campaigns can enhance these factors by suggesting a well-shaped narrative framework with a

special highlight of shared health values and empowering youth to make wise health decisions (Ajzen, 1991; Godin & Kok, 1996).

Despite the promising potential of storytelling in pharmaceutical campaigns, there is still a noticeable gap in understanding how youth specifically perceive these narratives. It is already claimed in research that storytelling is able to improve health message retention (Hinyard & Kreuter, 2007), but significantly fewer studies focus on youth's distinct reactions to pharmaceutical storytelling, especially when health information is often perceived as too complicated or not relevant to younger audiences (Fisher, 1984). Studying these perceptions is crucial, as it can make campaign development more targeted and effective, helping campaigns not only grab attention but also foster positive attitudes and actions among youth.

Furthermore, although narrative persuasion has been shown to be effective in influencing health behaviours, much of the existing research focuses on adult populations, leaving a gap in understanding how narrative framing should be adapted for younger demographics (Braddock & Dillard, 2016). The lack of focused research is particularly concerning given that young audiences are exposed to digital health narratives on a daily basis, but may interpret and interact with them differently than older populations (Miller-Day & Hecht, 2013). Without a clear understanding of how young people process and respond to pharmaceutical narratives, campaigns risk being ineffective or even counterproductive, reinforcing the need for more empirical research in this area.

This master thesis studies how young people perceive storytelling in pharmaceutical campaigns, with a specific focus on attitudes, behavioural intentions, and perceived relevance of health behaviors.

To explore these aspects this study analyses youth responses through the prism of the Health Belief Model (HBM), Social Cognitive Theory (SCT), Narrative Paradigm Theory (NPT) and the Theory of Planned Behavior (TPB). These concepts help to investigate how emotional engagement, narrative structure and social context contribute to the persuasiveness of health messages to young audiences.

This thesis aims to contribute to the development of youth-targeted healthcare and pharmaceutical campaigns, highlighting the need for such campaigns to be both informative and motivational, encouraging meaningful health actions.

2. Theoretical Framework

Youth's perception of health narratives and call-to-actions are mostly shaped by several interrelated factors – media consumption habits, social influences and development stage of health messages. Being citizens of the digital world, the receptivity to visually rich, story-driven content is particularly high. Researchers talk about a content approach which is used on a daily basis on platforms like YouTube, Instagram, and TikTok (Luo et al., 2025). This preference of a story-based approach over purely straightforward messages can signal that storytelling in health campaigns could resonate with young people deeper, increasing their engagement and receptivity to the presented information and key messages (Green & Brock, 2000). Since youth is a turbulent period of identity formation and social learning, relatable stories that reflect their experiences, challenges, and values are especially resonating. The research conducted by Kreuter et al., and Fisher indicates that young people are more likely to perceive the health messages as credible and relevant to their lives when they are conveyed through narratives with relatable characters and authentic situations (Kreuter et al., 2007; Fisher, 1984). This perceived relevance is able to increase the motivation to engage with the health behaviors demonstrated in the campaign, as they see these actions as applicable and attainable within their own lives, familiar to their lifestyle and daily routine.

To study the influence of storytelling on youth perception within pharmaceutical campaigns, four theoretical frameworks — Health Belief Model (HBM), Social Cognitive Theory (SCT), Theory of Planned Behavior (TPB), and Narrative Paradigm Theory (NPT) — are picked for the theoretical framework of this master thesis. These theories provide a fulfilling understanding of how attitudes, beliefs, and social influences build health behavior. HBM, being one of the core theories of health communication, provides insights of how perceived susceptibility and severity of health risks influence individuals' likelihood to take preventive action, which is essential for understanding how youth may perceive health messages through narratives (Becker, 1974). SCT, focusing on learning through observations and self-efficacy, provides information on how youth may feel empowered to take health actions after meeting relatable characters in stories behaving the same way (Bandura, 1986). TPB highlights the role of attitudes, subjective norms, and perceived behavioral control in forming intentions to act, demonstrating how storytelling can boost a sense of social support and intention to follow health advice (Ajzen, 1991). Lastly, Narrative Paradigm Theory claims that stories are the way individuals interpret the world, and when narratives possess coherence and fidelity — or

are aligned with the audience's own experiences and opinions — their chance of being accepted and resulting in positive attitudes increases (Fisher, 1984).

Together, these theories build a comprehensive multi-dimensional framework for understanding how storytelling shapes youth perceptions of health risks and influences their intentions to act.

2.1. Definition of concepts:

Before applying the selected theoretical frameworks, it is essential to clarify the key concepts used in this thesis in order to ensure conceptual clarity and consistency throughout the analysis.

Youth

In the context of healthcare and communication theory, the definition of "youth" is suitable for a wide age range. The World Health Organization(WHO) defines youth as individuals aged 10 to 24, including teenagers and young people (World Health Organization, 2021). However age ranges may vary depending on cultural and research contexts. For example, some researchers broaden this range to 30 years, taking into consideration an ongoing development of cognitive and social skills and abilities in this age (Sawyer et al., 2018). The understanding of how young people perceive and process information about health is crucially important in the era of digital technologies where people actively use different media platforms (Best et al., 2014).

Perception

Perception is defined as a process through which an individual realizes objects, relations and occasions with the help of sense systems, including such actions as identifying, observation and differentiation (American Psychological Association, n.d.). This process includes choice, organization and the interpretation of sensorial information for a formation of a coherent representation of the external world (McCornack et al., 2012). In the context of healthcare and communications perception plays a key role in how people interpret and react to the information about their health, including messages transmitted via different media sources and campaigns. Such factors as previous experience, cultural context and personal

particularities can significantly influence the way information is being perceived which directly influences health-related behaviour (Cherry, 2023).

Storytelling

Storytelling, or narrative, is a method of transmitting information through structured stories, consisting of introduction, development and the end, often with the involvement of characters and plots that evoke strong emotional response from an audience (Green & Brock, 2000). In the healthcare sphere storytelling is widely used for increasing the effectiveness of communication for better memorization and recall of the information as well as for the behavioural change (Hinyard & Kreuter, 2007). Especially among youth, storytelling can be a powerful instrument that allows to present sophisticated medical concepts in an accessible and attractive format (Houston et al., 2011).

Health Campaign

Health campaigns are studied as organized action with the primary goal of informing and motivating the population to certain decisions and/or actions related to the improvement of their health and life quality in terms of health (Noar, 2006). Such campaigns may include different strategies such as media usage, educational programs and societal events with the goal of changing health-related behaviour and increasing awareness about healthcare issues. Effective campaigns often base themselves on theoretical behavioural models and take into consideration cultural and societal particularities of target audience (Wakefield et al., 2010).

Narrative Persuasion

Narrative persuasion is a part of a process of influence on beliefs, states of mind and behaviours of the audience through stories which involves and emotionally immerses the listener or the reader into the narrative (Green & Brock, 2000). Key mechanisms of narrative persuasion are “transportation” or diving into the plot and “identification” or association with characters which can lead to the perceptual and behavioral change (Slater & Rouner, 2002). In the context of healthcare, the implementation of narrative persuasion can make the efficiency of communication significantly better, especially among youth, since young people are more empathetic towards emotionally rich and relevant stories (Moyer-Gusé, 2008).

2.2. Health Belief Model

One of the theories that offers a valuable framework for the development of understanding of how storytelling in pharmaceutical campaigns can influence youth perceptions of health risks, is the Health Belief Model (HBM). The HBM claims: individuals are more likely to adopt preventive health behavioral strategies if they associate themselves with possible victims of a health threat, if they recognize the potential severity of the issue, if they believe in the efficacy of the recommended action, and if they perceive minimal restrictions to adopt the behavior (Becker, 1974; Rosenstock, 1974). This model has been applied to get the idea of health behavior, especially in campaigns seeking to drive engagement with preventive measures (Champion & Skinner, 2008).

In the framework of Health Belief Model (HBM) in this thesis two key concepts are used: perceived susceptibility and perceived severity. They help to understand how narratives in pharmaceutical campaigns can make the perception of risks for young audiences more personal.

For youth, perceived susceptibility and perceived severity are crucially significant elements of the HBM as young people consider themselves as somehow related to health issues more rare, especially to those that are associated mostly with older age groups (Carpenter, 2010). Storytelling, however, can strengthen perceptions of susceptibility and severity via its characters and situations, which can lead to stronger awareness. Studies claim that narratives with characters that youth finds identifiable with themselves are more likely to give the feeling of personal relevance of health messages (Green & Brock, 2000). By transmitting health information via emotionally and socially resonating narrative, storytelling is able to elevate the personal significance of the health risks, thus making the likelihood that young audiences will view the message as related to their lives higher (Hinyard & Kreuter, 2007).

Moreover, storytelling in health campaigns can be a “cue to action,” another important element in the HBM. Cues to action are specific triggers that prompt people to realize health risks and consider particular behaviors to avoid them (Rosenstock, 1974). By depicting relatable situations where characters acting in advance responding to health risks, storytelling can play a role of an external cue to action, making youth consider their own susceptibility to risks similar that they have seen. This aligns with research by Kreuter and McClure (2004),

who realized that narratives make the acceptance of messages higher and influence health behavior change by making the audience perceive the issue as more relevant.

Empirical research suggests that narratives can increase engagement with health messages by enhancing perceptions of susceptibility and seriousness, especially when targeted at youth audiences. For example, research shows that incorporating identification with characters in health narratives significantly increases belief and intention to adopt healthier behaviours (de Graaf et al., 2016). In their review, de Graaf et al. analyzed 153 experimental researches dedicated to narrative persuasion in the healthcare sphere. Authors claim that the effectiveness of narratives depends on their contents, forms and contexts It is especially highlighted that narratives with highly emotional storyline and with first-person narration lead to the changes in audience's behaviour and intentions more often. The reason behind is that such narratives deepen not only the engagement with characters but also the identification with them. Subsequently, it makes the perception of key components of the persuasion model in healthcare – susceptibility and severity – stronger.

In addition, emotional involvement in a story has been found to promote message memorisation and long-term attitudinal change, particularly in disease prevention campaigns (Murphy et al., 2013). Researchers conducted an experiment, comparing the effectiveness of narrative and non-narrative approaches in the delivery of information about cervical cancer to women across different ethnic groups. Results clearly showed that narrative approach is significantly more effective in raising awareness, positive attitudes formation and intentions to attend check-up procedures (screening). It was especially demonstrated by Mexican-American women who demonstrated the high level of "transportation" – diving into plot, strong identification with characters and emotional involvement. As in the study conducted by de Graaf et al. (2012), these factors increased the perception of susceptibility and severity of the disease – the core of the HBM theory.

These results support the idea that storytelling is not only a means of simplifying complex health information, but also a persuasive strategy consistent with the core principles of HBM. The use of carefully and intelligently chosen stories in pharmaceutical campaigns is likely to address the tendency of youth audiences to ignore health risks because the information will be perceived as personal and immediate. Both aforementioned empirical studies highlight the importance of emotional engagement and identification with characters from narratives for increasing the level of susceptibility and severity perception. That means that the use of

storytelling in pharmaceutical campaigns can make the information about health risks more personal and valuable for youth, increasing their motivation to act preventionally.

Thus, based on concepts of perceived susceptibility and perceived severity, I propose the following hypothesis:

H1: Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant.

2.3. Narrative Paradigm Theory

The Narrative Paradigm Theory (NPT), developed by Walter Fisher (1984), builds a framework for analyzing how people make sense of the world with stories and why straightforward factual information resonates less deeply as narratives. NPT claims that humans are storytellers by nature and that narratives are a kind of linguistic lens through which people percept reality. NPT highlights two key elements — narrative coherence and narrative fidelity. Narrative coherence refers to the internal consistency of the story, while narrative fidelity pertains to the story's alignment with the values and beliefs of the listener. When these elements are present, audiences are more likely to see the narrative as credible and meaningful, leading to positive attitudes toward the message (Fisher, 1984).

These two concepts – narrative coherence and narrative fidelity – are studied in this thesis, as they determine how youth perceive the narratives as believable and meaningful to themselves.

For young people, storytelling in pharmaceutical campaigns leverages this natural affinity for narratives, giving relevant and compelling meanings for understanding health messages. Research points out that youth seems to prefer story-based content elements as it is more engaging than straightforward, clear and factual messages, especially if youth's values and social contexts are the part of the story (Green & Brock, 2000). By creating a narrative which is easily identifiable, pharmaceutical campaigns can make young potential consumers feel engaged on both emotional and cognitive levels, making campaigns be perceived favourably (Kreuter et al., 2007).

Moreover, NPT suggests that the chance of acceptance of underlying messages of a story by the audience is higher if it feels that story aligns with exact and concrete life experiences and beliefs. Talking about pharmaceutical campaigns, storytelling that represents youth-centered

experiences can enhance narrative fidelity and add attractiveness to health messages to be trusted. As Hinyard and Kreuter (2007) claim, coherent and personally meaningful stories are more likely to raise positive perceptions of the key messages of the campaign and the campaign initiator, since it makes audiences connect with the story, experience emotions and feel invested in its outcome.

Empirical research further supports the important role of narrative coherence and narrative fidelity in shaping the effectiveness of health communication. Research shows that when narratives are aligned with the audience's personal experiences and beliefs, they contribute not only to better message memorability but also to behavioural intentions (McQueen et al., 2011). McQueen et al. (2011) in their research examined how the stories of breast cancer survivors influence the perception of messages, beliefs and attitudes among African-American women. Results showed that participants who watched narrative video felt both positive and negative emotions stronger, they identified themselves with the message source better and were more engaged in the process of watching, compared with those who watched informative video. These emotional and cognitive reactions influenced the analysis of messages and behavioural correlates such as breast cancer risk perception, fear of the cancer and remembering the key messages. That means that narratives lower the resistance towards the belief and increase cognitive analysis which can make not only the level of acceptance but also the motivation to act in the questions of your own health higher among the target audience.

Moreover, research proves that narrative-based health messages are more effective in reducing resistance to persuasive content compared to factual communication because they create an emotional and personal connection with the audience (Shen et al., 2015). Shen et al. (2015) conducted a meta-analysis, evaluating the persuasiveness of narratives in health communication. They analysed 25 studies with overall 9 330 participants. Results showed that in general narratives had low, yet significant persuasive effects ($r = 0.063$, $p < 0.01$). Especially effective were those narratives which were presented in audio and video formats, meanwhile the printed narratives did not show any significant influence. Moreover, narratives dedicated to disease detection and prevention have a significant impact when those which promoted the cessation of bad habits had no significant effect. These results highlight the importance of the proper choice of the right format and content of narrative for an effective health communication.

Both of these empirical studies emphasize narrative coherence and narrative fidelity in the formation of effective health communication. They demonstrate that emotional engagement and self-identification with characters increase the depth of perception and recall of messages and lead to changes in attitudes and behaviour. They also prove that narratives (especially in audiovisual formats) are effective in growing motivation towards disease prevention. These findings confirm that the use of storytelling in pharmaceutical campaigns adapted for young people – including relatable characters and authentic life situations – can significantly increase the engagement and persuasiveness of such campaigns.

By taking principles of NPT into consideration, pharmaceutical campaigns can drive positive attitudes toward their ideas among youth by creating narratives that feel relevant on the one hand and trustworthy on another.

With the following theoretical foundation, based on the influence of narrative coherence and narrative fidelity, I formulate the second hypothesis:

H2: Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign.

2.4. Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT), suggested by Albert Bandura, highlights the importance of learning through observations, as well as of self-efficacy and social influence in building people's behaviours and attitudes. The concept of self-efficacy, or a belief in people in their ability to follow and replicate a specific behavior, is one of the key ones in social cognitive theory (Bandura, 1986). It claims that individuals are more likely to believe they can perform particular behaviour if they observe other people demonstrating this behaviour and receiving any kind of benefits from that. This perceived behavioral control is forced by seen role models or relatable characters overcoming similar challenges, closely related to challenges of viewers. For health communication campaigns, SCT can state that depicting characters who successfully overcome or share health challenges can make the audience's confidence in their ability to make similar decisions, outcomes and actions stronger (Bandura, 2001).

Within the framework of Social Cognitive Theory (SCT) the key concepts studied in this thesis are observational learning and self-efficacy, as these factors explain how behavioural

models presented in narratives can increase young people's confidence in their ability to repeat recommended behaviour.

For youth, storytelling that includes relevant characters who overcome health issues with positive outcomes through recommended actions can strengthen self-efficacy by suggesting concrete examples of how to adopt these behaviors. Youth is about to feel motivated to act if they face peers or role models in narratives explaining that desirable behavioural strategies are achievable. Research claims that narratives with characters who successfully overcome issues to follow particular health behaviours increase the sense of control over similar behaviors in real lives (McAlister et al., 2008). This effect is especially meaningful for youth, whose health-related behaviours are in a formation process. Adolescents tend to rely on external approval and role models - whether peers, adults, or media - to shape their attitudes and decisions about health, further reinforcing the persuasive potential of narrative messages (Chung et al., 2021)

Storytelling becomes a practical application of SCT ideas in pharmaceutical campaigns, by depicting characters sharing proper health behaviors, thus empowering self-efficacy and perceived behavioral control among youth. This modeling effect can encourage young audiences to adopt the key health messages, as the chance of adoption of the positive behaviors they observe is higher. As Bandura (1986) states, individuals are more likely to develop a strong intention to engage in those behavioral actions which they perceive as attainable.

Empirical research confirms that observational learning and reinforcement of self-efficacy play a key role in the effectiveness of health communication. Research shows that when audiences see people similar to themselves successfully applying healthy behavioural strategies in narratives, their perception of their own ability to follow the same behaviours increases significantly (Moyer-Gusé & Nabi, 2010). In their research Moyer-Gusé and Nabi (2010) examined how narrative elements in entertaining TV-shows influence the resistance towards beliefs in healthcare. In their experiments participants were exposed to narrative drama about teenage pregnancy or non-narrative informative video. Results showed that those participants who watched narrative content demonstrated a higher level of parasocial identification with the characters and emotional engagement which was making their resistance to persuasive massage lower. At the same time it increased the acceptance of suggested behavioural models. Narratives helped the participants to see the behaviour of

characters as realistic and achievable, which increased their own self-efficacy and intention to repeat the demonstrated behaviour. These results confirm that the narration with attractive role models contributes to the audience's development of self-efficacy – the key component of Social Cognitive Theory (SCT).

Furthermore, research proves that storytelling-based medical and pharmaceutical interventions have a stronger impact on behaviour change when they portray realistic and emotionally compelling role models (Bekalu et al., 2017). Bekalu et al. (2017) analysed how inequality in access to communication sources influence the perception of mass media campaigns in healthcare. This research shows that narrative interventions with realistic and emotionally attractive role models were especially effective in the incentivization of behavioural changes. Participants who perceived campaign characters as close to their social and cultural reality, reported higher self-efficacy and higher willingness to follow suggested recommendations which lead to behavioural change. Realistic modelling in narratives, therefore, strengthens the perception of possibility to change one's own behaviour and increases the behavioural intentions, which is fully consistent with the principles of Social Cognitive Theory (SCT).

Both empirical researches highlight that behavioural modelling through storytelling (especially with the introduction of realistic and recognizable characters) increases audience's self-efficacy and reduces the resistance towards belief. These findings confirm that pharmaceutical campaigns using SCT storytelling – with characters overcoming health problems close to the audience – can increase self-efficacy and behavioural control through observational learning, ultimately increasing adoption of healthy behavioural strategies among young people.

Based on SCT and its concepts of observational learning and self-efficacy, it is logical to propose the following hypothesis:

H3: Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions.

2.5. Theory of Planned Behaviour (TPB)

Icek Ajzen (1991) developed The Theory of Planned Behaviour (TPB), which claims that there are primary factors involved in a forming process of people's intention to adopt a

behaviour. These are positive attitudes toward behaviour, subjective norms, and perceived behavioural control. TPB suggests that behavioural intentions depend on attitude toward the behaviour and are the strongest when this attitude is positive. That happens because of the feeling of social pressure to perform it, and belief of being able to do so (Ajzen, 1991). In the context of storytelling in pharmaceutical campaigns, narratives and their components can positively influence attitudes and subjective norms, by establishing emotional engagement and demonstrating social relevance.

Based on the Theory of Planned Behaviour (TPB), two key concepts – positive attitude toward behaviour and subjective norms – are studied in this thesis. These variables explain how narratives in campaigns can form the intention to follow the health advice among young people.

Storytelling in pharmaceutical campaigns can manage attitudes by suggesting narratives resonating with young audiences, making health behaviours both practically and rationally beneficial and personally deep and meaningful. Studies demonstrated that when young people engage with health-related narratives with characters they can associate them with, they are more likely to perceive recommended actions and behavioural strategies positively (Morris et al., 2019).

Furthermore, storytelling in health campaigns within its narratives depicts health behaviour norms that are socially appreciated. Young audiences are especially influenced by social norms and behaviour of peers, and meeting similar characters who behave in a particular way regarding health can be perceived as a kind of a social approval for these concrete actions (Ajzen, 2002). By implementing this strategy, campaigns can make young people feel that their social group appreciates and follows the behaviour. This makes their intention to consider the health advice depicted in the campaign higher.

Empirical research supports the effectiveness of storytelling in shaping attitudes and reinforcing social norms, which is consistent with the core principles of the Theory of Planned Behaviour (TPB). Research shows that narrative-based health interventions significantly influence intention to change behaviour by increasing emotional engagement and enhancing social identification with the message (Heley et al., 2020).

Heley et al. (2020) conducted an experimental study for the evaluation of the influence of narrative messages on reducing health-related stigma and promoting positive health behavior. Their results suggest that stories with recognizable characters foster deeper emotional engagement and a sense of similarity, which in turn increases receptivity to recommended behaviors. Narrative messages were more effective than informational messages because they enhance social identification and activate subjective norms, both of which are key components in the Theory of Planned Behavior (TPB). The study confirms that emotional and social immersion in health narratives can strengthen people's belief that recommended behaviors are socially endorsed and achievable on a personal level.

Furthermore, research proves that when young people perceive behaviours as socially normal and positively represented in narratives, they are more likely to internalise and adopt them (Cialdini et al., 1990). Cialdini et al. (1990) developed the theory of focusing normative behaviour within the framework of social norms theory. In the series of experiments they showed that the humans' behaviour is much more determined by actual (focusing) norms than just by the knowledge about norms. Especially, the emphasis on the fact that "right" behaviour is supported by the society and widely spread leads to the significant reduction of norm violations (for example, littering). Their study proves: when narratives clearly demonstrate cautious approval of desired behaviour through the behaviour of characters, they enhance the perception of social norms as relevant and mandatory. When applied to healthcare, that means that narratives demonstrating the positive attitude towards health-wise behaviour among "one's own" significantly enhance the probability of acceptance among youth.

These findings highlight that pharmaceutical campaigns using socially relevant narratives with relatable characters can increase social approval and perceived behavioural control, which in turn increases the likelihood of adopting healthy behaviours. They prove that the use of storytelling in pharmaceutical campaigns targeting young people can contribute to building positive attitudes towards behaviour, subjective norms and strong motivation to follow health recommendations.

Based on this theory and the influence of positive attitude toward behaviour and subjective norms on a formation of intentions, I reasonably propose the following hypothesis:

H4: Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice.

3. Methodology

This chapter introduces a quantitative, causal experimental design aimed at examining the effectiveness of storytelling in pharmaceutical campaigns targeted at youth based on hypotheses formulated according to the theoretical framework.

The goal of this master thesis is to empirically examine how storytelling in pharmaceutical campaigns affects its young audiences' perception. Drawing on four theoretical models — Health Belief Model (HBM), Narrative Paradigm Theory (NPT), Social Cognitive Theory (SCT) and Theory of Planned Behaviour (TPB) – the objective of the study is to analyze how narrative form of message delivery influence key variables: perceived personal relevance, attitude towards the campaign, perceived behavioural control and intention to follow health advice.

The choice of a quantitative experimental method is justified by its capacity to figure out cause-and-effect relationships between type of communication and audience's reaction. The application of experiment allows not only to isolate the effect of a particular factor (for example, the presence of storytelling in a campaign), but also to identify which particular involving mechanisms (for example, emotional, cognitive or social) contribute to the formation of positive attitudes towards healthier behaviour. In this thesis the experiment is considered as the most appropriate methodological instrument for the evaluation of how effective narrative strategies in youth-targeted communications are. This is particularly relevant in the paradigm of youth's digital habits and their sensibility towards visual and narrative content (Hinyard & Kreuter, 2007; de Graaf et al., 2016).

The study is built as a one-factor between-subjects experimental design with three conditions and post-test only measurement. Experimental part consists of the demonstration of two advertisement videos on the topic of flu vaccination: one of which is designed as a narrative with storyline and emotional engagement, the second one is a standard informational video clip based solely on scientific facts and without any narrative elements. This paradigm allows direct comparison of the influence of narrative and non-narrative message delivery on psychological and behavioural reactions.

Methodologically this experiment relies on the vignette method. Vignettes are short media stimuli included in a questionnaire. This approach ensures the high level of conditions'

standardization, reduces external distortions and gives the participants the opportunity to interact with stimuli in the context of a familiar online environment. The use of the SoSci Survey platform allows researchers to manage the logic of survey flexibly, randomly distribute the participants across experimental and control groups and to gather data automatically with the full GDPR protocols compliance (Leiner, 2019). This is critically important for surveys involving young people where the trust in digital platforms and demand for confidentiality play a significant role.

The participants are randomly distributed across three groups: two experimental (narrative vs. non-narrative conditions) and one control. Participants in the control group do not receive video stimuli and complete only the questionnaire. That allows the comparison of base level of factors without video materials' impact. This experiment structure allows not only to identify the differences across groups but also to evaluate how significant is the influence of a narrative on perceptions' change.

Each participant after the exposure to video stimuli will be invited to complete the questionnaire that includes measurement scales of the following dependent variables:

- Perceived Personal Relevance,
- Attitude Towards the Campaign,
- Perceived Behavioural Control,
- Intention to Follow Health Advice.

These variables are derived from the following theoretical models: HBM explains the role of perceived personal relevance, SCT – the role of perceived behavioural control, TPB – the importance of intention to follow health advice and NPT – the attitude towards the campaign, the significance of coherence and credibility of a narrative.

Covariates such as gender, age, the level of education, health opinions and health-related habits are collected before exposure to stimuli. It helps to control the potential interrupting factors, ensuring the high reliability of findings.

A special attention is devoted in the research design to ethical aspects. The topic of flu is chosen as neutral, non-traumatizing and leaving no space for contradictions. All stimuli are based on scientifically proven data and were checked regarding possible ethical concerns, neutrality and the absence of manipulating influence.

Thus, the experimental model used in this master thesis allows the estimation of the efficiency of storytelling in pharmaceutical and healthcare campaigns, having in a core strictly operationalized variables and theoretically proved hypotheses. It combines academic excellence, digital flexibility and adaptations according to media habits of young audiences. This design is not only methodologically sound and adaptable to digital environments, but also capable of generating actionable insights for improving strategic communication in the pharmaceutical and healthcare sectors.

3.1. Experiments

Experimental methods are widely used in communication studies, especially when it is necessary to empirically evaluate the influence of different characteristics of media messages on audience beliefs, perceptions and behaviours. This approach is especially effective in the field of health communication where the key objective is not only informing but also shaping behavioural intentions. In recent years, narrative formats – stories with characters, plot and emotional engagement – are studied especially precisely. To get the idea of how narratives particularly influence the youth, researchers conduct experimental designs more often. It is relevant for the exploration of pharmaceutical or health narratives and their effects on different target audiences.

An experiment allows the researcher to control key variables, to isolate the influence of a particular factor (for example, the form of message delivery – narrative or non-narrative) and to draw conclusions about cause-and-effect relationships (Bekalu et al., 2018). It is worth mentioning that unlike surveys or interviews, experiments allow minimal confounding for causality testing. With the randomization of participants and strictly standardized procedure, an experiment provides a high internal validity, which makes it one of the most reliable methods of testing hypotheses about the influence of media messages on beliefs and behaviours. This is especially worthy in situations where the comparison of different communication strategies is required. For example, to find out whether narratives increase the level of risk perception and/or the intention to act among youth.

The advantage of the experimental approach is also in flexibility and in the possibility of modeling realistic media consumption scenarios. Among different types of experiments, online ones are especially relevant for working with young audiences since they allow participants to interact with the stimuli in a familiar digital environment which decreases the

artefacts of artificiality and increases the external validity. The use of the special platforms like SoSci Survey (which were used in this study as well) provides technical reliability, options for randomizing participants, conditional logic and data collection in automated mode. These features help researchers to maintain experimental control and achieve a high level of realism at the same time. Moreover, compared to commercial platforms, SoSci is highly appreciated for its GDPR compliance and certain flexibility in building logic structures.

Empirical studies prove the effectiveness of the use of experiments in health communication. The meta-analysis of Braddock and Dillard (2016), studied dozens of experiments, showed that narrative messages have a stable and positive influence on beliefs, behavioural intentions and in some cases factual behaviour. Studies conducted by Yan et al. (2023) and Morales et al. (2017) highlight the importance of the realism of experiments – both in stimuli appearance and in the choice of channel for the sharing of information. For example, in the case of Yan et al. (2023), it helped to investigate how immersive scenarios in short videos (mobile platforms, AI-algorithms, novelty and value of the content) influence behavioural intentions by enhancing emotional and cognitive engagement by the audience and thereby increasing the presence of the scenarios in the minds of the viewers. Thus, an experiment is a proper methodological instrument which can be adapted according to the youth's media consumption.

The survey platforms such as SoSci Survey allow to integrate multimedia content smoothly, to manage the respondents' flow and to gather data in real time. It makes them ideal instruments for conducting online experiments dedicated to study the influence of pharmaceutical and healthcare campaigns and messages for young audiences. It is worth emphasizing that this design not only allows one to identify whether different narratives work but also explains what exactly makes it effective – engagement, self-identification, emotional reaction or cognitive evaluation.

In summary, the aforementioned evidence demonstrates that the experimental methods are the optimal choice for analysing the storytelling in pharmaceutical campaigns' influence on young audiences. They empirically confirm the influence of narrative on key variables such as risk perception, self-efficacy or behavioral intentions. And also they rely on clearly formulated hypotheses based on theoretical models. In this thesis the experiment allows us to see how narrative-based approaches influence the youth's perception of healthcare campaigns content.

3.2. Construction of vignettes

The vignette method is a popular instrument in quantitative studies, especially when there is a demand on investigating the perceptions or reactions of participants in conditions, which are, on the one hand, as close to reality as possible but, on the other hand, are controlled. This method allows researchers to model concrete situations and systematically variate its characteristics for evaluating the influence of particular factors on respondents' behaviour (Aguinis & Bradley, 2014). That is the reason why this approach is being used in applied studies in media communications and healthcare more often (Steiner et al., 2016).

In this master thesis vignette method is applied for investigation of influence of healthcare-related messages delivery form (as narrative or neutral informative format) on the young participants' perception of key aspects of the campaign. The process of vignettes construction consisted of two main stages: the plots construction and the preparation of visual realization of video materials.

Stage 1. Plots construction

Firstly, a clear thematic focus was chosen. Both stimuli are about flu vaccination – a neutral, scientifically proven and comprehensible topic for participants. After that a sole key idea for both types of advertisement was developed, it helped to formulate a consistent call-to-action and centralize the main message to develop two different forms of its presentation. The main goal was to make two texts differ from each other only in terms of form (narrative vs. non-narrative) but not in terms of content meanings and key message.

On this stage two texts for video stimuli were created:

- Non-narrative text (informative): a concise, rigorously factual reporting with key information about the flu virus, its risks and the importance of vaccination. It was composed in the format of neutral, popular science communication without including personal elements or emotional patterns. This approach fully addresses the recommendations for creating valid vignettes (Steiner et al., 2016).

- Narrative text: the narrative stimulus was created as a mini-story, built around the idea of a library as a metaphor of a human body. The flu virus in this plot was compared with an unknown or unidentified book and the vaccination – with the missing chapter which enables the system to identify the threat. This approach made it possible to formulate a

coherent narrative structure without an exact character but with a vivid symbolic content and the logic of narration. Key elements of storytelling were used – imagery, analogy and the development of thought from problem to solution. The plot was constructed based on the principles of narrative impact defined in the studies of Green and Brock (2000), Hinyard and Kreuter (2007), where it is highlighted that even abstract stories can cultivate an emotional response and engagement. Special care was taken to ensure that the text did not have any manipulative elements maintaining a neutral and informative tone of voice which increases trust.

The following criteria were taken into consideration:

1. Brevity. Each text must be voiced in no longer than 35-40 seconds for making the video stimuli not overwhelming for participants and not diminishing their attention to the content. It is also fully compliant with the practices of modern communication research where the length of stimuli is usually limited in order to reduce cognitive load and attention artifacts (Aguinis & Bradley, 2014).
2. Semantic equivalence. Both plots had the same amount of information, same main ideas and the same level of persuasiveness for making the difference be only in the delivery form (narrative or non-narrative).
3. Call-to-action unity. Both narrative and non-narrative stimuli were finished with exactly the same in terms of structure, meaning and wording call-to-action persuading viewers to get vaccinated. This helped to avoid the distortion of the results, which could be caused by the difference in rhetorical pressure.
4. Lexical simplicity. The wording of stimuli was adapted to young audiences: sophisticated medical terminology was avoided as well as stylistically overwhelmed phrases and passive constructions. That was important not only for cognitive accessibility but also for the increasing internal validity of the study.

Stage 2. The preparation of visual materials

After the finalization of plots for stimuli it was decided to proceed with visualizing them in the format of two short video advertisements. Each text was voiced only by the researcher (to avoid voice effect bias), recorded on a neutral white background and with the same staging. This approach is fully compliant with the recommendations of maintaining the control of visual and audial formalization of stimuli in vignette experiments (Aguinis & Bradley, 2014).

The absence of visually distorting factors, uniformity of filming and calm way of information delivery helps to focus the attention of participants especially on the content of messages, not on the staging or the expressiveness of the researcher in the frame. This approach helps to maintain a high level of internal validity – the key requirement for experimental studies using vignette method (Aguinis & Bradley, 2014).

Thus, the construction of vignettes was based on following the scientific standards and recommendations for making valid and replicant experimental stimuli. That is why the plot equivalence was achieved and the difference was only in a delivery form. That allows to study the influence of storytelling isolated from other possible variables.

Final stimuli texts can be found in *Appendix 1*.

3.3. Variables operationalization: measurement scales construction for dependent variables and covariates

To ensure the reliability and construct validity of this study, scales for estimation of the dependent variables and covariates were built based on validated methodological approaches, widely used in empirical communication and healthcare research. The operationalization of variables was grounded not only in the conceptual foundations of four theoretical models (HBM, SCT, TPB, NPT) but also in empirical scales whose reliability and suitability in comparable contexts were proven.

The choice of scales format

For measuring three key dependent variables – Perceived Personal Relevance, Perceived Behavioral Control and Intent to Follow Health Advice – 5-point Likert scales with variants ranging from “strongly disagree” to “strongly agree” were employed. This kind of format allows participants to express the degree of agreement, enabling quantitative analysis and facilitating meaningful measurement of comparisons (Likert, 1932; Boateng et al., 2018).

For evaluating Attitudes Towards the Campaign – the variable which is closely related to aesthetic and value perception – semantic differential scale was chosen since it enables the measurement of attitudes asking the respondent to pick a particular level between two polar adjectives or descriptions (for example, “beneficial — harmful” or “engaging — boring”). This approach recommended itself as a sensitive and precise way to measure attitudes in advertising and communication research (Osgood et al., 1957; MacKenzie & Lutz, 1989).

Dependent variables measurement

1. Perceived Personal Relevance

For measuring these variables scales from prior research based on Health Belief Model with a focus on such constructs as perceived susceptibility and perceived severity (Champion & Skinner, 2008).

Moreover, the elements from studies on narrative persuasion including emotional engagement and identification with the story were taken (Green & Brock, 2000).

Examples:

«The health risks mentioned in the campaign feel personally relevant to me»

«I believe I am at risk for the health issues discussed in the campaign»

«The campaign addresses health concerns that are important to me»

2. Attitudes Toward the Campaign

For the evaluation of attitudes toward the campaign, a semantic differential scale adapted from classical studies on advertisement effectiveness was employed (MacKenzie & Lutz, 1989).

Examples :

Beneficial – Harmful

Persuasive – Unpersuasive

Engaging – Boring

Trustworthy – Untrustworthy

This type of scale enables researchers to assess the aesthetic and affective reactions of participants towards the form of content delivery.

3. Perceived Behavioural Control

This scale is based on the Theory of Planned Behaviour and estimates the level of respondents' confidence in their own ability to perform recommended behaviour (Ajzen, 1991).

Examples:

«I am confident that I can follow the health advice provided in the campaign»

«Following the health advice in the campaign is entirely under my control»

«I have the resources and ability to implement the health recommendations from the campaign»

This scale helps to assess how the perceived ease of action influences the behaviour.

4. Intention to Follow Health Advice

Operationalization of this intention is based on scale from behavioural studies in healthcare (Fishbein & Ajzen, 2010).

Examples:

«I intend to follow the health advice provided in the campaign»

«I plan to make the recommended health changes suggested by the campaign»

"I will try to adopt the health behaviors promoted in the campaign"

All scales were pre-tested in order to verify clearness and cognitive accessibility, to eliminate ambiguity and to reduce the barrier of engagement.

Covariates measurement

To increase the preciseness and to control for background influences, several covariates were included. They were sociodemographic data, health-related opinions and health-related habits.

1. Sociodemographic data

Respondents were asked to select the age group they belong to, to indicate their gender and the level of education. This data was collected in the format of standard multiple-choice closed questions and used as control variables in subsequent statistical analysis. It is important to mention that the question with age was primarily used for excluding those participants who were 25 years old and older since the individuals above this age did not fall within the target demographic of the study.

2. Health-related habits

To measure this covariate a short scale from the behavioural health studies was adapted (Wakefield et al., 2010). They consisted of questions regarding the frequency of engaging in physical activity, attending medical check-ups, using face masks and consuming the verified information related to health.

Examples:

«I regularly engage in physical activities (e.g. exercise, sports, walking)»

«I visit a doctor for regular check-ups and health screenings»

«I take precautions to prevent infectious diseases (e.g., handwashing, wearing masks during outbreaks)»

«I actively seek health-related information from credible sources (e.g., doctors, health websites)»

3. Health-related opinions

With Likert scales the beliefs and opinions regarding trust doctors, the importance of personal responsibility for the health and vaccination attitudes were measured.

Examples:

«I trust medical professionals and public health organizations for health advice»

«I think personal lifestyle choices have a significant impact on long-term health»

«I believe that vaccination is an effective way to prevent infectious diseases»

«I think health campaigns influence people's decisions about disease prevention»

Adaptation and wording approach

In order to ensure clarity and accessibility of the questionnaire, particular attention to wording was given. All statements in scales were formulated in a simple and clear manner avoiding scientific jargon and sophisticated constructions which is crucially important when working with young audiences. This is fully compliant with the recommendations for measurement instruments adaptation and youth samplings (Fornell & Larcker, 1981; Sudman et al., 1996).

Scales were designed to ensure that their use in the online survey would not be cognitively overwhelming or causing respondent fatigue. Thus, the methodology of variable operationalization combines theoretical rigor and empirical applicability.

3.4. Additional validity measures

To maintain the credibility, reliability, and internal validity of the results, special attention in the research design was paid to the additional measures of the quality of data control. Among them, manipulation checks and attention checks, including in the structure of the questionnaire, played a key role.

Manipulation check

A manipulation check is a methodological instrument that is usually implemented after exposure to the stimuli (in the case of this study, after the demonstration of video advertisements). The main goal is to ensure that participants perceive and understand the key characteristics of an independent variable. In this research, it was a type of communication message delivery: storytelling or non-storytelling. To check the effectiveness of manipulation respondents were asked directly about the format of stimuli that they had seen. It helped to prove that the differences in dependent variables (perception, attitudes, intentions) are explained by the format of message delivery rather than individual subjective explanations or occasional factors.

How would you describe the way information is presented in the video?

(Select one option)

— A direct and factual presentation of health information without metaphors or personal elements.

— A story-driven explanation using metaphors or narrative elements to convey the message.

The results of the manipulation check were used to exclude those participants who did not recognize the format of the video stimuli and for additional control during the data analysis. This approach is recommended for experimental studies to increase internal validity (Hauser et al., 2018; Perdue & Summers, 1986).

Attention Span Check

Questions for an attention span check were included in the survey to exclude the responses from the participants who failed to demonstrate sufficient engagement or responded inattentively. One of these questions was formulated as demonstrated below:

Select “very likely” here

Those participants who did not meet this requirement were excluded from the sampling automatically which helped to boost the quality of gathered data and statistical power of the whole analysis (Oppenheimer et al., 2009; Meade & Craig, 2012).

Age Filter (covariates)

An additional element of control in this study was a question about age that was included in the section on sociodemographic covariates. According to the goal of the experiment – to investigate the storytelling perception among youth – all respondents who selected the “25+ years old” option were excluded from the analysis. Age filter was a part of the questionnaire logic and such respondents received a polite exit message immediately. This approach guaranteed that the final sampling consisted of the target audience group and the results were not distorted by the audience's age diversity.

Such an approach is fully compliant with best practices in social and behavioral sciences when experimental outcomes are restricted by the special cohort (e.g., adolescents or young adults) and homogeneity of sampling for increasing the validity of the results is met (Aguinis & Bradley, 2014).

The combination of these measures – manipulation check, attention span check and age filter — build a reliable system of filtration data and to control its quality.

The application of these features allowed to:

- make sure that the experimental manipulation is effective;
- increase credibility of responses;
- exclude inattentive or irrelevant participants;
- narrow the analysis focus on target audience, that is necessary for experimental goals of this master thesis

Final questionnaire can be found in *Appendix 2*.

3.5. Pretest

For a preliminary check of the correctness of questionnaire parts and the logic of participation path a limited pretest was conducted. The goal was to detect possible difficulties in understanding the questions and to ensure that the survey on the SoSci Platform is technically functional. Two people from the target audience of the study (aged from 18 to 24) took part in the pretest. It's worth mentioning that they did not take part in the main experimental part, so their data was not used in the analysis.

During the pretest the particular attention was drawn to the perceptions of wording, clearness of navigation and technical stability. Both of the respondents provided feedback which was taken into consideration before finalizing the questionnaire. Participants confirmed that the structure of questions was clear, the conditional logic was correct and coherent and transition between pages and parts was technically smooth, with no failures observed. Based on this, it was decided to keep the original format of questions without any changes.

Thus, the pretest helped to prove that the measurement instrument is adequate and that the questionnaire structure and wording do not make the respondents struggling. This provided the necessary degree of reliability before the start of the main phase of data collection.

3.6. Consideration of ethical aspects

Ethical aspects had a central place in the design of this study because it involved an experiment related to health topics which can lead to a risk of emotional stress or the

misinterpretation of the content as questionable or sensitive (Fouka & Mantzorou, 2011). According to modern standards of scientific integrity, a researcher must provide possible consequences for participants in advance and implement mechanisms that reduce potential harm (Resnik, 2015; Israel & Hay, 2006). That is why in the stage of setting the study concrete measures for ensuring its ethical acceptability, transparency, and participants' comfort were implemented.

The choice of a neutral topic

One of the key decisions was informed exclusion from the experiment on such potentially harmful topics as oncology, disabilities, death, or chronic incurable diseases. Even though these topics are widely discussed in healthcare, they may cause participants anxiety, stress, or unpleasant memories, especially in the case of personal experience. I went with the topic of flu vaccination instead – this is relatively "safe" and familiar for broad audience issues and has been presented in scientific, societal, and media spheres for decades being a less possible cause of emotional triggers (Betsch et al., 2017). This topic remains relevant and ethically neutral, allowing us to investigate the response to health communication.

Ethical expertise and forms

In the stage of planning this master thesis, I utilized the internal questionnaire for research ethics of the University of Vienna, specially adapted for the Institute of Publicistics and Communication Science. This step helped me to check in advance, whether my experiment can be attributed to the high-risk category and whether the formal registration of the thesis and receiving approval from the IRB (Institutional Review Board) is needed. In particular, I focused on a key question from their IRB checklist:

Can it be expected that participants experience emotional stress, anxiety, exhaustion, pain or other negative effects that exceed what can be expected in everyday life?

According to the preliminary estimate based on the content of the video and the design of the questionnaire, my study does not pose such a risk, however, all recommended measures for reducing the potentially harmful impact are implemented.

Informed consent and voluntary participation

Before the beginning of the experiment, each participant received an informational brief with clear and accessible information regarding the goal of the study, the format, and the length of the experiment. It was clearly stated that participants had a right to voluntarily withdraw at any stage without any negative consequences. The consent was received in the format of a multiple-choice question: a participant should pick the option where it was clearly said that he agreed to proceed further. This approach is fully compliant with the recommendations of the Economic and Social Research Council (ESRC, 2015) and the norms of GDPR regarding informed consent forms (European Commission, 2018).

Manipulations and debriefing

Since the study involves experimental manipulation (video stimuli that differ from each other in a way of information delivery), participants did not receive the full details about hypotheses before the beginning. However, after the end of the survey they were exposed to a debriefing page that included information about the goal of manipulation, its meaning, and its role in the overall research design. This approach was compliant with the principles of respecting participants and their right to understand their impact on this master thesis (Christensen et al., 2020).

Privacy and data protection

It is important to highlight that the personal information of participants such as IP addresses or browser information was not collected and their answers were completely anonymized. All data is stored at the secured platform SoSci Survey, which is compliant with European standards of data protection. The only person who has access to this data is the author. All collected information will be deleted after the end of the analysis. Thus, data is fully protected in both law and technical terms (BPS, 2014).

Additional measures of ethical protection

For additional insurance of the correctness of manipulation and minimization of potential risks:

- Attention check — an element for checking, if the respondent read the questions of the survey attentively – was added.

- A manipulation check was implemented to verify if the participant truly and fully understood, to which stimuli format it was exposed (narrative or non-narrative);
- Participants aged 25 and older were excluded from the experiment automatically based on the age screening covariates question (the age filter was a part of the logic of this experiment). They were redirected in a polite way to the exit message automatically and were not a part of the main sample anymore.

That guaranteed a focus on an audience of youth, according to the target group, without possible distortions that could be caused by age variety.

Transparency Principles and Open Science

All methodology, questionnaire design, and data analytics measures can be found in the appendices to this master thesis. I strictly consider and follow the principles of open science and am ready to publish the materials and anonymized data after the negotiation with the supervisor. This approach has an impact on the reproducibility of results and increases trust in the research (Nosek et al., 2015).

3.7. Sampling strategy and recruitment process

Sampling and recruitment procedures are the key elements of any empirical experimental study since they have a direct influence on the validity, generalizability, and interpretability of received results (Etikan, Musa, & Alkassim, 2016). In the frame of this master thesis, special attention was devoted to sampling strategies, according to the target audience, theoretical goals, and experimental design of the research.

Questionnaire language

The questionnaire was fully made in English language. The decision to do this was caused by multiple factors. Firstly, the English language is still the most widespread tool of international communication, especially among students and youth (who are the target audience of the current study). This choice helps to maintain accessibility and understanding of questions for youth from different cultural and national contexts (Crystal, 2003).

Secondly, the strategy of non-translation is necessary to maintain the consistency and idiomatic precision of experimental stimuli. The translation of complex concepts – especially

related to health, behavior, and beliefs – can follow changes in interpretations and violations of comparison of measurements (Behr, 2017).

Such concepts as, for example, “perceived control” can carry a different semantic meaning depending on different grammatical structures and cultural contexts of languages (van de Vijver & Hambleton, 1996). That is why the ability to understand written and spoken English language on a comprehensive level was a prerequisite for being included in a sample.

Age and demographic criteria

The target audience of this research is youth as defined by the UN documents – individuals aged 15 to 24 (UN DESA, 2013). For maintaining the ethical norms, devoted to voluntary consent and data protection, the low age border was stated at the level of 18 years. Individuals younger than 18 were excluded from the participation because, in the majority of countries, the involvement of minors requires the separate consent of their parents or guardians. Participants older than 24 were excluded automatically with the age filter, which was logically implemented into the questionnaire. These respondents were politely directed to the finish of the survey and were restricted from the main part of the survey. This strict age criterion helped to maintain the cohort homogeneity of sampling and minimize the influence of age distortions (Aguinis & Bradley, 2014).

Determining the sample size

The estimated number of participants varied from 40 to 50 people. However, the precise number was finalized based on the a priori power analysis test with the usage of the G*Power program (Faul et al., 2007). This instrument allows us to find the bare minimum sample size to detect an effect of a given magnitude at standard levels of significance ($\alpha = 0.05$) and power (typically 0.80). The calculations took into account the number of experimental groups (narrative and non-narrative format), the estimated effect size based on previous research, and the type of statistical tests (e.g., ANOVA or regression analysis). This approach avoided both the risk of underpowering the test (genus II error) and unnecessarily wasting resources (Lakens, 2013).

Recruitment strategy

To achieve the representativeness and diversity of the sample the multilevel strategy for recruiting participants was implemented:

1. Personal social networks — calling posts in the personal social media pages of the author, messages in student chats and groups. These channels helped to reach the respondents who meet the language and age criteria.

2. Online youth communities — publications were posted in English-speaking communities related to education, communications, psychology, and healthcare. These forums made it possible to reach youth beyond academia.

3. Snowball sampling — respondents were encouraged to share the link to the survey with their friends, colleagues, and acquaintances who met the criteria. Although this method can be found doubtful in terms of being representative enough, it is widely used in online studies with a specific target audience or a demographic group of respondents (Noy, 2008).

A platform for conducting a survey

The survey was built on a SoSci Survey platform — it is an online instrument that is widely recognized by academia, providing high flexibility and is fully compliant with confidentiality norms and scientific rigor (Leiner, 2019). SoSci Survey allows us to utilize different formats of questions, conduct stimuli randomization, set logical conditions, and exclude irrelevant answers automatically.

The platform is compliant with GDPR protocols and requirements: all answers were anonymized, data is stored on protected servers in Germany, and the author of this master thesis is the only person who has access to them. A mobile adaptation of the questionnaire allowed to reduce the number of non-finished survey passes.

Preventing sampling errors

Despite the advantages of online recruiting, there is a certain risk of particular distortions. For example, an over-representation of digitally active youth or individuals already interested in the topic of vaccination. To minimize this risk, the invitations to the survey were formulated neutrally and oriented on the broad young audience, not only on those who are interested.

Moreover, after the finalizing of data gathering the filtration of inappropriate answers was conducted with the use of attention check and manipulation check (Oppenheimer et al., 2009;

Hauser et al., 2018), which helped to exclude the irrelevant data and maintain a high quality of sampling.

Thus, sampling and recruiting procedures were developed taking into account the research objectives, ethical standards, and internal validity requirements. Formulated shaming criteria, well-structured participant engagement strategy, and high-quality instruments of data control allow claiming that data gathering was reliable, sound, and consistent with best practices in the social and behavioral sciences.

3.8. Data analysis strategy

Approach to working with gathered data

In the frame of the current master thesis data analysis procedures were conducted in three phases: data preparation, test of measurement models, and test of hypotheses. This approach is compliant with modern standards of quantitative analysis in social and behavioral science (Field, 2018; Hair et al., 2020).

Phase 1. Data preparation

The first step of the data analysis was the procedure of data cleaning. Only those respondents who correctly passed the attention check were included in the sampling. This criterion is essential to maintain data quality, especially in online surveys (Hauser et al., 2018). Moreover, missing values were also transformed: for quantitative variables missing values were replaced by a median, and meanwhile, an indicator value was created to save the possible regularity of missing values (Enders, 2010).

Moreover, data was normalized to unify scales, since dependent variables were measured not only with the use of Likert scales but also with semantic differential scales. Data standardization makes further analysis easier and clarifies the interpretation of results (Tabachnick & Fidell, 2013).

A basic understanding of the characteristics of the sample was achieved by calculating descriptive statistics (mean values, standard deviations, skewness, kurtosis), which allowed us to check the normality of the distribution and possible outliers.

Phase 2. Test of measurement models

Before testing hypotheses, a confirmatory factor analysis (CFA) was conducted to check the validity of latent variables. CFA allows us to estimate how adequately measurements (observed variables) represent declared constructs (for example, “perceived relevance”, “attitude towards campaign”, and “intention to follow health advice”) (Brown, 2015).

The use of CFA is justified because it relies on a theoretical model rather than an inductive approach (Fabrigar et al., 1999).

Cronbach's alpha coefficient was used to assess the internal consistency of the scales. According to generally accepted criteria, values above 0.70 indicate acceptable scale reliability (Nunnally & Bernstein, 1994). If necessary, scales were adjusted by eliminating poorly correlated indicators.

Phase 3. Hypotheses test: t-test choice

To test hypotheses H1-H4, a two-sample t-test for independent samples was applied. Such a test is used when comparing the mean values of two groups if the independent variable is dichotomous and the dependent variable is quantitative (Gliner, Morgan, & Leech, 2017). In my experiment, respondents were randomly assigned to two conditions: "narrative stimulus" and "non-narrative stimulus." Thus, the basic conditions for applying the t-test were met.

Theoretical justification of the t-test choice

The choice of the t-test is justified by several factors:

1. Dichotomous independent variable: the factor narrative presence has two categories (yes/no). According to theoretical materials about applied statistics (Field, 2018), especially in this kind of situation t-test is the most appropriate instrument.

2. Interval level of dependent variables: four dependent variables — perceived personal relevance, attitude towards the campaign, perceived behavioral control, and intention to follow the advice, — were measured with the use of Likert scales and semantic differential scales. Previous research claims that aggregated Likert scales can be interpreted as interval scales, especially at 5 or more items (Norman, 2010), allowing for parametric methods of analysis.

3. Comparison of averages between two independent groups: just because groups were formed randomly and were not overlapping, they can be considered independent. Thus, the classical independent t-test is appropriate to the current research design (Gravetter & Wallnau, 2016).

4. T-test robustness: the t-test retains high statistical power even for moderate deviations from normality, especially when sample sizes are similar across groups (Lumley et al., 2002).

Empirical application of the t-test to hypotheses

H1: Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant:

- IV – presence of storytelling in the campaign (scale – binary)
- DV – perceived personal relevance (scale – Likert)
- Test: two-sample t-test

H2: Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign:

- IV – storytelling in the campaign (scale – binary)
- DV – attitude towards the campaign (scale – semantic differential)
- Test: two-sample t-test

H3: Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions:

- IV – storytelling in the campaign (scale – binary)
- DV – perceived behavioral control (scale – Likert)
- Test: two-sample t-test

H4: Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice:

- IV – storytelling in the campaign (scale – binary)

- DV – intent to follow health advice (scale – Likert)
- Test: two-sample t-test

Each analysis was preceded by a check of assumptions: normality of distribution (Shapiro-Wilk test), homogeneity of variance (Levene's test), and absence of outliers. Non-parametric alternatives (e.g. Mann-Whitney U-test) were applied if significant outliers were identified.

Choice of the Data Analysis Platform

For the statistical analysis running a programming language R is utilized. It is one of the most popular instruments in modern academic practices of data analysis(Ihaka & Gentleman, 1996; Wickham et al., 2019).

It allows to:

- unprecise t-tests and visualize them;
- to create reproducible scripts;
- to be flexible in analysis settings;
- to integrate data with CFA packages (for example, lavaan).

The code can be found in the Appendix 3 as a part of compliance with principles of open science and providing analytical transparency.

4. Findings

4.1. Description of the sample

The link to the survey questionnaire was opened 373 times, demonstrating high interest in the topic among young people. However, only 119 participants who passed all preliminary filters (attention check and age verification (18 to 24 years old inclusive)) were included in the final sample.

These measures increased the reliability of the data and ensured compliance with ethical research standards.

Respondents were randomly assigned to three experimental conditions:

1. Narrative stimulus – a group that received a video with storytelling elements;
2. Non-narrative stimulus – a group that watched a factual video without a narrative;
3. Control group – did not receive any video material and only answered the questions in the main questionnaire.

This three-group distribution allowed for a comparative analysis between the effects of narrative and non-narrative information presentation, as well as a comparison with the baseline level of perception in the absence of any stimulus. Randomization was carried out using the SoSci Survey platform, which ensured the independence of the groups and the validity of the future statistical analysis.

Among all participants:

- Women – 70 people (58.8%),
- Men – 48 people (40.3%),
- Preferred not to specify – 1 person (0.8%).

Thus, there is a slight predominance of women in the sample, but both genders are represented sufficiently to ensure diversity in the perception of stimuli.

Most participants had completed or were continuing higher education:

- Bachelor's degree – about 54% (the largest share),

- Master's degree – about 20%,
- Secondary education / secondary school diploma – about 10% for each category,
- Doctorate and no secondary school diploma – less than 7%.

Thus, most respondents had a high level of educational attainment, which is typical for a young university audience and consistent with the target group of the study.

For an in-depth analysis, two blocks of additional variables were studied: health-related opinions and health-related habits. The assessment was carried out using a 5-point scale: from “strongly disagree” to “strongly agree” (for opinions) and from ‘never’ to “always” (for habits).

Opinions

- “Personal lifestyle affects health” — mean 4.50, median 5, SD = 0.58.
- “I trust doctors and healthcare” — mean 4.21, median 4, SD = 0.70.

“Vaccination is effective” — mean 4.18, median 4, SD = 0.87.“Campaigns influence behavior” — mean 4.05, median 4, SD = 0.70.

Respondents generally express a high level of trust in medical sources, belief in the effectiveness of vaccination, and awareness of the role of prevention campaigns.

Habits

- Regular physical activity — mean 3.63, median 4, SD = 1.03.
- Visits to the doctor for checkups — mean 2.82, median 3, SD = 0.97.
- Preventive measures (hygiene, masks) — mean 3.99, median 4, SD = 0.89.
- Searching for information on reliable sources — average 3.36, median 3, SD = 1.12.

The values show that behavioral attitudes are less stable than opinions: regular visits to the doctor are the least common practice, and the desire to search for medical information shows significant variability.

Overall, the sample consists of participants who are relatively evenly distributed across the experimental conditions, with a predominance of women and a high level of education. Respondents demonstrated high cognitive engagement: their attitudes toward healthcare

reflect trust in doctors, the importance of vaccination, and lifestyle, but behavioral patterns vary: for example, visits to the doctor are less common than physical activity or basic preventive measures. These differences between opinion and behavior provide an important context for analyzing the effectiveness of communication in pharmaceutical campaigns and highlight the need to study perceptions rather than just actions.

4.2. Descriptive statistics and distribution of variables

To assess the distribution of values across key study variables — *perceived personal relevance*, *attitude toward the campaign*, *perceived behavioral control*, and *intention to follow advice* — descriptive statistics were calculated for each individual statement. The analysis covered mean values, standard deviations (SD), skewness, and kurtosis.

Mean values and variability

All 13 measured items used a scale from 1 to 5, and the mean values ranged from 3.2 to 4.3. This indicates a moderately positive perception of the video campaign content by the participants in the experiment. The scales relating to attitudes toward the campaign received the highest average scores, especially the “trust/distrust” item, while the “intentions” scale showed more moderate values.

Standard deviations for all variables ranged from 0.75 to 1.10, indicating sufficient variability in responses and no excessive agreement among participants. This makes the scales informative for further analysis.

Asymmetry and excess

The asymmetry coefficients for most variables ranged from –0.1 to –1.0, indicating a slight leftward shift in the distribution. This is particularly evident in the perceived control (PBC) scale, where participants more often chose higher values (e.g., “agree” or “strongly agree”). This pattern may indicate that participants generally feel confident in their ability to follow the campaign's advice.

The kurtosis values were within acceptable limits, ranging from –1.1 to +2.0, indicating no outliers or abnormally peaked distributions. All variables show a distribution shape close to normal.

The overall picture of descriptive statistics indicates stability and balance in the sample, as well as acceptable distribution patterns for key variables. Moderate mean values, sufficient variability, low asymmetry, and a normal level of excess allow us to conclude that the conditions for the application of parametric analysis methods (such as t-tests and CFA) are met. Thus, the data obtained are suitable for further statistical analysis and interpretation of hypotheses within the experimental design.

4.3. Reliability of measurement scales: Cronbach's Alpha and Confirmatory Factor Analysis

Before conducting hypothesis testing in this study, an assessment of the internal consistency of measurement instruments reflecting four key variables was carried out: perceived personal relevance, attitude toward the campaign, perceived behavioral control, and intention to follow health advice. The assessment was conducted separately for two experimental groups (storytelling and non-storytelling), without including a control group, as the latter did not receive any motivational influence.

Assessment using Cronbach's Alpha

Cronbach's α reliability coefficient was calculated for each scale:

- Perceived Personal Relevance: $\alpha \approx 0.75$. All three statements on the scale demonstrated a stable response structure with no missing values. An α value above 0.70 indicates acceptable internal consistency. Consequently, the scale is reliable for participants who received both narrative and non-narrative stimuli.
- Attitude Toward the Campaign: $\alpha \approx 0.82$. Four bipolar semantic pairs showed a consistent positive assessment of the campaign. An α value above 0.80 indicates high internal consistency and allows us to conclude that the scale is highly reliable.
- Perceived Behavioral Control: $\alpha \approx 0.78$. All three items on the scale were fully completed. Most respondents gave positive responses, demonstrating similarity in perception. An α value above 0.70 confirms that the scale consistently measures perceived control over behavior.
- Intention to Follow Health Advice: $\alpha \approx 0.80$. All three elements of the intention scale used a 1–5 scale in a balanced manner with a slight bias toward positive responses. The α value indicates high consistency and suitability of the scale for analysis.

Overall conclusion: All scales demonstrated high internal reliability ($\alpha > 0.70$) with no missing values, making them suitable for further factor analysis and statistical hypothesis testing.

Confirmatory factor analysis (CFA)

To further verify the measurement structure, a confirmatory factor analysis (CFA) was conducted based on the assumption of a four-factor model.

Each latent factor corresponded to a set of 3–4 empirical variables. The model was estimated using maximum likelihood estimation with robust correction (MLR) and accounting for missing data using the FIML method.

Model fit indices:

- CFI = 0.944. The Comparative Fit Index indicates that the model fits the data well: slightly below the criterion for "excellent" fit (0.95), but well above the minimum threshold of 0.90.
- TLI = 0.925. The Tucker–Lewis Index also exceeds the threshold of 0.90, indicating that the model significantly improves the explanation of the data compared to the baseline model (the independence model).
- RMSEA = 0.093. The Root Mean Square Error of Approximation value slightly exceeds the recommended maximum of 0.08, indicating moderate misfit. The model can be improved by revising the residuals or excluding weak indicators.
- SRMR = 0.078. Standardized Root Mean Square Residual is below the critical threshold of 0.08, indicating small differences between empirical and model correlations.

Factor loadings (Standardized Loadings)

All indicators showed significant and sufficiently high loadings on the corresponding factors:

- Minimum loading: 0.60 (PBC2 – "under my control")
- Maximum loading: 0.87 (AT4 – "Trustworthy/Untrustworthy")

This means that all observed variables reliably reflect the assumed latent constructs.

A combined reliability analysis using Cronbach's Alpha and CFA confirms that the scales used in the study demonstrate high internal consistency and convergent validity. Although the RMSEA value is slightly elevated, the other model fit indices are within the recommended ranges, and all items load significantly on the corresponding factors. These results confirm the acceptability of the measures for further testing of hypotheses within the framework of the narrative communication effectiveness model in a pharmaceutical context.

4.4. Testing hypotheses H1–H4

This study empirically tested four hypotheses (H1–H4), each of which describes the potential influence of campaign presentation format (storytelling vs. non-storytelling) on one of the key dependent variables: perception of personal relevance, attitude toward the campaign, perceived behavioral control, and intention to follow health advice. Only two experimental groups were included in the analysis: storytelling (n = 46) and non-storytelling (n = 44). A control group was not included in this test, as it was not exposed to the stimuli.

Before each comparison, assumptions of normality of distribution (Shapiro–Wilk test) and homogeneity of variances (Levering test) were tested, based on which a decision was made to choose a parametric (t-test) or non-parametric (Mann–Whitney test) method of comparison.

H1: Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant

To test the first hypothesis, a two-sample t-test was used. The results showed no statistically significant differences between the groups: $t(88) = –0.54$, $p = 0.59$.

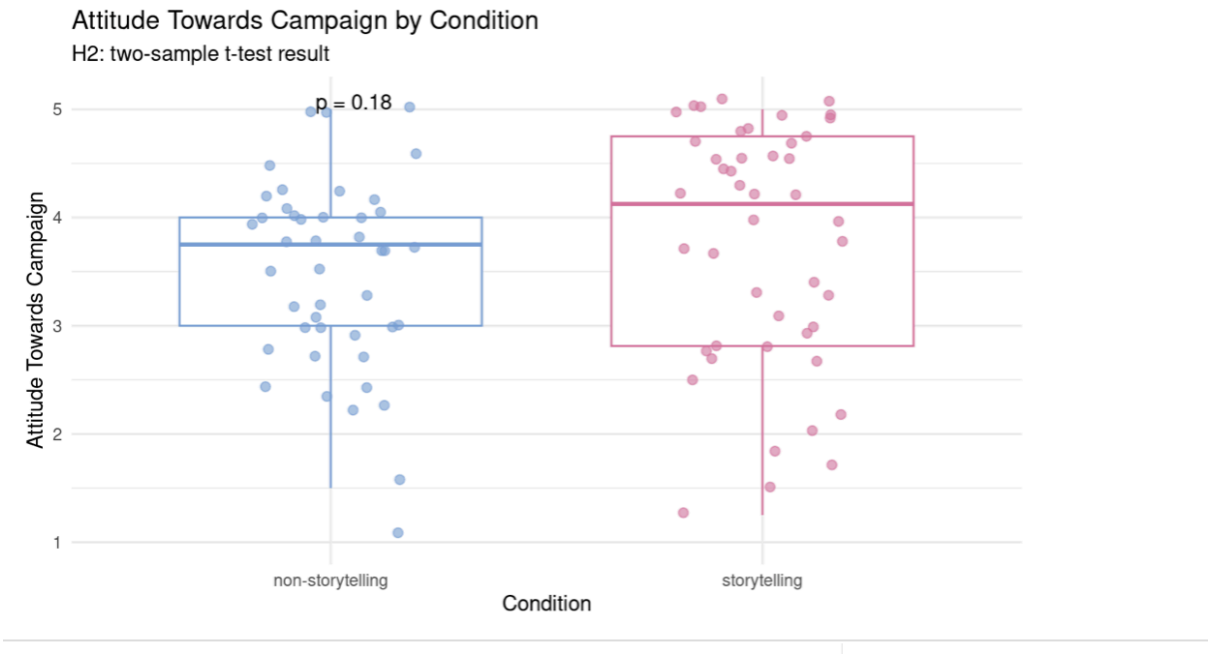
The mean values on the personal relevance scale were virtually identical in both groups. This suggests that the inclusion of narrative in the campaign structure did not make the perception of risks more personally meaningful or relevant. Therefore, the hypothesis was not confirmed: storytelling had no effect on the perception of personal relevance compared to the informative approach.

Table 1: Boxplot – Perceived Personal Relevance by Condition

H2: Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign

The second hypothesis suggested that storytelling would increase positive attitudes toward the campaign. However, the t-test again failed to reveal any significant differences between the groups: $t(88) = -1.34$, $p = 0.18$. Thus, the form of presentation—whether a narrative story or an informational message—did not change the perception of the campaign as reliable, useful, or engaging. Participants in both groups rated the campaign similarly, and hypothesis H2 was also rejected.

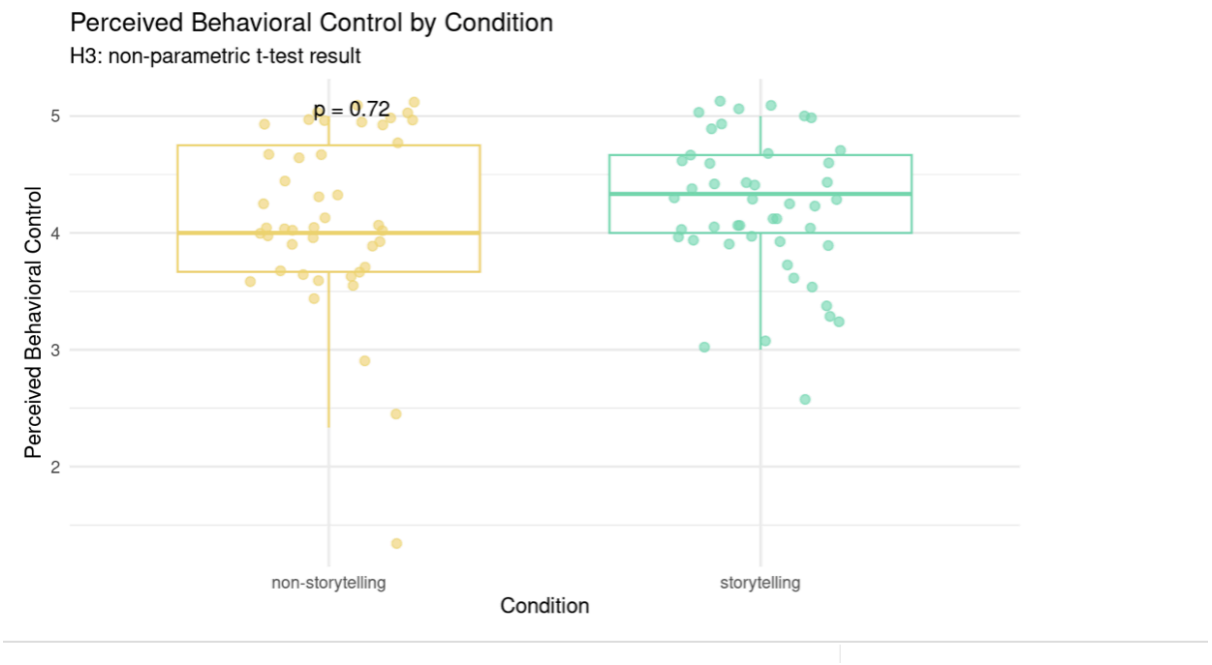
Table 2: Boxplot – Attitude Toward the Campaign by Condition



H3: Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions

Since the distribution of this variable did not follow a normal distribution, the nonparametric Mann–Whitney test was used. The analysis showed no differences: W = 978, p = 0.783. This means that participants who viewed the narrative campaign did not feel more capable of implementing the suggested actions than those who saw the informative version. Perceived control remained at a similar level in both groups, allowing us to reject hypothesis H3.

Table 3: Boxplot – Perceived Behavioral Control by Condition

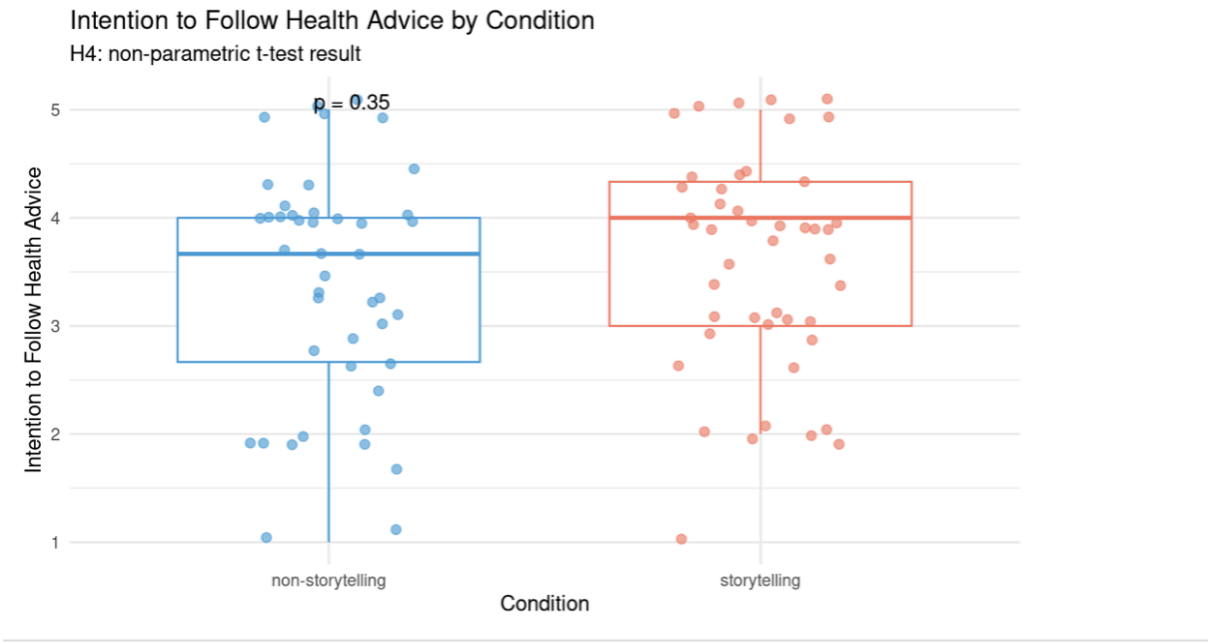


H4: Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice

Finally, hypothesis H4 was also tested using the Mann–Whitney test due to the non-normal distribution. The result: W = 898, p = 0.353, indicating no statistically significant differences.

Participants who viewed the narrative campaign did not demonstrate a higher level of intention to follow the recommendations received than participants who viewed the informative version. Thus, H4 is not confirmed.

Table 4: Boxplot – Intention to Follow Health Advice by Condition



According to the results of the analysis, none of the four hypotheses received statistical confirmation. Regardless of the form of presentation—narrative or non-narrative—participants evaluated the campaign similarly across all key parameters: they did not perceive it as more relevant, did not express greater sympathy, did not feel more capable of taking action, and did not demonstrate greater willingness to follow the advice.

4.5. Analysis of the control group compared to the stimulus group

After completing the main hypothesis testing comparing narrative and non-narrative forms of presentation within the experimental conditions, additional analysis was conducted to compare the control group with the stimulus group(combining both forms of presentation). This step was necessary to understand the extent to which participation in the communication campaign itself influences key psychological variables, even without focusing on a specific presentation form.

It is important to emphasize that this analysis is not intended to test hypotheses H1–H4. The control group was not initially considered part of the main comparison of formats and did not receive any experimental intervention. The purpose of this step was only to identify possible differences between those who had seen the campaign and those who had not seen it.

The final sample consisted of 119 participants, of whom 90 (75.6%) were assigned to the stimulus group (storytelling or non-storytelling), and 29 (24.4%) to the control group, which did not watch the video and proceeded directly to answering the questions. Thus, about a quarter of the respondents were not exposed to the campaign, which made it possible to accurately observe their natural attitudes and intentions in comparison with the participants who received the information.

For all four dependent variables — perceived personal relevance, attitude toward the campaign, perceived behavioral control, and intention to follow the advice — appropriate statistical comparisons were made between the control and experimental groups. Depending on the normality of the distribution (Shapiro–Wilk test) and the homogeneity of the variances (Levering test), either t-tests or nonparametric Wilcoxon criteria were used.

Results

• Perceived Personal Relevance: no differences between the groups were found ($p = 0.95$). This may indicate that the topic of vaccination is perceived as moderately important regardless of the impact of the campaign.

• Attitude Toward the Campaign: no statistically significant differences were found ($p = 0.66$), which is to be expected given that the control group participants were not exposed to any material that could be evaluated.

• Perceived Behavioral Control: A significant difference was found ($p = 0.0023$) — participants who watched the video (regardless of its form) reported higher levels of confidence in their ability to follow the advice. This may indicate that even basic information exposure enhances subjective feelings of control.

• Intention to Follow Health Advice: no differences were found ($p = 0.40$), suggesting that without an emphasis on the form of presentation or personal relevance, it is difficult to form a sustained intention to change behavior.

Analysis of the control group demonstrates that the very fact of exposure to health information, even in a neutral or non-narrative form, can influence the sense of behavioral control — that is, participants' confidence in their own ability to implement the proposed actions. At the same time, components such as personal relevance, attitude toward the

campaign, and behavioral intentions remain at similar levels among those who were not exposed to the campaign. These data help to complement the main study, providing a deeper understanding of the effects associated with exposure itself, rather than just its form.

5. Discussion

This study aimed to empirically test the effectiveness of storytelling in pharmaceutical campaigns targeting young audiences. Four hypotheses, based on the Health Belief Model (HBM; Rosenstock, 1974), Social Cognitive Theory (SCT; Bandura, 1986), Theory of Planned Behavior (TPB; Ajzen, 1991), and Narrative Paradigm Theory (NPT; Fisher, 1985) suggested that the narrative form of presenting information (compared to the non-narrative form) enhances the perception of personal relevance, forms a more positive attitude toward the campaign, increases perceived behavioral control, and strengthens the intention to follow health recommendations. However, none of the hypotheses were statistically confirmed: the mean values for all four variables were statistically indistinguishable between the groups that received narrative and non-narrative videos.

This result requires further reflection, especially in light of the existing theoretical framework. According to NPT, narrative should have an impact provided that it has coherence (internal logic) and fidelity (consistency with the audience's personal experience) (Fisher, 1985). The experiment used pre-made video material, and although it contained a narrative structure, it is possible that the level of identification with the characters and stories was insufficient to activate the effects described in theory. Similarly, HBM suggests that narrative enhances the perception of perceived vulnerability and seriousness (Rosenstock, 1974), but young audiences may still perceive the topics addressed (e.g., vaccination) as less relevant to their age group. This explains why hypothesis H1 (“Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant”) was not confirmed: participants did not perceive the threat as personal, regardless of the form of presentation.

Hypothesis H2 (“Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign”) was also not confirmed. This may indicate that young people's overall trust in pharmaceutical campaigns is determined by other factors, such as trust in the source rather than the style of presentation (Petty & Cacioppo, 1986). Moreover, participants in both groups initially rated the campaign positively (high average scores), which could have led to a ceiling effect, limiting the potential for differences.

Hypothesis H3 (“Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions”) deserves special attention. Although the differences

between the narrative and non-narrative groups were not significant, an additional analysis including a comparison with the control group revealed a statistically significant effect: participants who watched any video—both narrative and non-narrative—demonstrated significantly higher levels of perceived behavioral control ($p = 0.0023$) than those who did not watch any videos. This means that informational exposure alone, regardless of form, contributes to increased confidence in the ability to follow health advice. This result is extremely important for both theory and practice: it confirms a key assumption of SCT about the importance of behavioral models and reinforcing exposure for the formation of self-efficacy (Bandura, 1977). It also emphasizes that in the healthcare industry, when developing content (especially for young audiences), it is important not only to choose the optimal format of presentation, but also to ensure exposure itself—even short-term exposure can have a reinforcing effect on subjective perceptions of control.

As for hypothesis H4 ("Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice"), no statistically significant differences were found here either. This may indicate that the intention to follow recommendations in this demographic group is formed not so much by the form of presentation as by other factors, such as trust in the source of information, subjective norms, or previous experience (Ajzen, 1991).

Overall, the results indicate that the narrative form of presenting information in pharmaceutical campaigns did not demonstrate advantages over the factual form, at least within the scope of this experiment. However, the significance of the overall effect (according to H3) shows that even short video campaigns can enhance the subjective perception of health control. This may be particularly valuable when designing preventive campaigns targeting young audiences.

5.1. Limitations of the study

1. Limited exposure duration. All participants watched the video only once, and the duration of the video was less than two minutes. This format may be insufficient to generate deep engagement or a lasting effect, especially in the context of narrative persuasive communication, where the "immersion" effect does not develop immediately (Green & Brock, 2000).

2. Low level of identification with the character. The characters in the video may not have been sufficiently similar to the respondents in terms of age, experience, or lifestyle. According to the Narrative Paradigm theory, identification and “fidelity” (similarity of life experiences) are key factors in forming positive attitudes (Fisher, 1985; Murphy et al., 2013). Their absence may have reduced the effect of storytelling.

3. Cultural and thematic context. Vaccination is a socially significant but often polarizing topic. Respondents may have had preconceived notions that were not influenced by storytelling. A more neutral or less politicized topic might have yielded different results (Oschatz et al., 2022).

4. Single assessment effect. All variables were measured immediately after viewing the video. This does not allow for the tracking of delayed effects that may manifest themselves over time. For example, the effect of storytelling may not be immediate, but may become apparent upon repeated interaction with the topic or character (Appel & Richter, 2007).

5. Failure to take into account participants' media preferences. It is possible that some respondents prefer a dry, factual presentation of information. In this case, storytelling, even high-quality storytelling, may be perceived as less convincing or intrusive. Individual differences in media preferences may have reduced the generalizability of the results (de Wit et al., 2008).

6. Relatively small sample size. Although the distribution by conditions was balanced (n = 46 and n = 44), the total number of participants (n = 90 in the experimental conditions) may be insufficient to identify small but significant effects. Increasing the sample size would allow for more reliable testing of the hypotheses (Cohen, 1992).

5.2. Directions for future research and practical applications

Despite the lack of statistically significant effects, the results of this study open up a number of important directions for future work in the field of narrative pharmaceutical communication.

First, further research should focus on the type and quality of the narrative. Not all stories are equally effective: first-person narratives with emotional twists and a hero who is close to the audience may elicit stronger identification and engagement (Larkey & Hecht, 2010; McQueen

et al., 2011). An experimental comparison of different narrative forms (e.g., dramatic vs. informational, with a hero of the same gender or age) may provide more accurate recommendations for future campaigns.

Second, it is important to consider the possibility of multiple exposures to the story. Research shows that narrative influence is enhanced by repeated exposure (Singhal & Rogers, 1999). This can be achieved through serial formats, multi-episode stories, or reposts on social media, which are closer to how young people consume content in real life.

Third, it is worth expanding the range of topics. Perhaps vaccination is too familiar or polarizing a topic, and it does not evoke strong emotions among young people. Topics related to mental health, sex education, or chronic disease prevention could elicit a stronger response and allow the narrative to exert its power to a greater extent.

In addition, media preferences and consumption contexts need to be taken into account. Young people often interact with content in a context of media overload and may prefer short, visually striking, and personalized formats. Future narrative campaigns could therefore use native platform formats (Reels, TikTok, YouTube Shorts) and adapt to audience behavior patterns.

Finally, individual differences in susceptibility to storytelling should be explored in greater depth. For example, empathy levels, a tendency toward narrative thinking, or previous experience with healthcare institutions can significantly influence the effectiveness of a narrative (de Graaf et al., 2012; Moyer-Gusé, 2008). The introduction of personalized elements or the adaptation of stories to different cognitive styles can increase the effectiveness of campaigns. In practical terms, these findings emphasize that storytelling is not a universal recipe, but a tool whose effectiveness depends on many factors. For practitioners, this means the need for preliminary testing of materials, in-depth analysis of the target audience, and adaptation of the format, characters, and content to a specific segment. Only under these conditions can storytelling become an effective means of persuasion in pharmaceutical communications, especially when working with young people.

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7. References

Aguinis, H., & Bradley, K. J. (2014). *Best practice recommendations for designing and implementing experimental vignette methodology studies*. Organizational Research Methods, 17(4), 351–371. https://doi.org/10.1177/1094428114547952

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self‐efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665–683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

American Psychological Association. (n.d.). *APA dictionary of psychology*. https://dictionary.apa.org

Appel, M., & Richter, T. (2007). Persuasive effects of fictional narratives increase over time. *Media Psychology, 10*(1), 113–134. https://doi.org/10.1080/15213260701301194

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1–26. https://doi.org/10.1146/annurev.psych.52.1.1

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs, 2*(4), 324–473. https://doi.org/10.1177/109019817400200407

Behr, D. (2017). Assessing the use of back translation: The shortcomings of back translation as a quality testing method. *International Journal of Social Research Methodology, 20*(6), 573–584. https://doi.org/10.1080/13645579.2016.1252188

Bekalu, M. A., Eggermont, S., & Viswanath, K. (2017). The role of communication inequality in mediating the impacts of socioecological and informational determinants of health on health outcomes. *Health Communication, 32*(5), 591–599.

Bekalu, M. A., Bigman, C. A., McCloud, R. F., Lin, L. K., & Viswanath, K. (2018). The relative persuasiveness of narrative versus non-narrative health messages in public health emergency communication: Evidence from a field experiment. *Preventive Medicine, 111*, 284–290. https://doi.org/10.1016/j.ypmed.2017.11.014

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review, 41*, 27–36. https://doi.org/10.1016/j.childyouth.2014.03.001

Betsch, C., Schmid, P., Heinemeier, D., Korn, L., Holtmann, C., & Böhm, R. (2017). Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. *PLOS ONE, 13*(12), e0208601. https://doi.org/10.1371/journal.pone.0208601

Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health, 6*, Article 149. https://doi.org/10.3389/fpubh.2018.00149

Braddock, K., & Dillard, J. P. (2016). Meta-analytic evidence for the persuasive effect of narratives on beliefs, attitudes, intentions, and behaviors. *Communication Monographs, 83*(4), 446–467. https://doi.org/10.1080/03637751.2015.1128555

British Psychological Society. (2014). *Code of Human Research Ethics (2nd ed.)*. https://www.bps.org.uk/news-and-policy/bps-code-human-research-ethics-2nd-edition-2014

Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). The Guilford Press.

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication, 25*(8), 661–669. https://doi.org/10.1080/10410236.2010.521906

Champion, V. L., & Skinner, C. S. (2008). The health belief model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 45–65). Jossey-Bass.

Cherry, K. (2023). What is perception? *Verywell Mind*. https://www.verywellmind.com/what-is-perception-2795237

Christensen, L. B., Johnson, R. B., & Turner, L. A. (2020). *Research methods, design, and analysis* (13th ed.). Pearson.

Chung, J. E., Reicks, M., & Henry, H. (2021). Dietary behaviors, physical activity, and reported role models among US adolescents. *Youth & Society, 53*(5), 612–633.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026. https://doi.org/10.1037/0022-3514.58.6.1015

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155

Crystal, D. (2003). *English as a global language* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511486999

de Graaf, A., Hoeken, H., Sanders, J., & Beentjes, J. W. J. (2012). Identification as a mechanism of narrative persuasion. *Communication Research, 39*(6), 802–823. https://doi.org/10.1177/0093650211408594

de Graaf, A., Sanders, J., & Hoeken, H. (2016). Characteristics of narrative interventions and health effects: A review of the content, form, and context of narratives in health-related narrative persuasion research. *Review of Communication Research, 4*, 88–131. https://doi.org/10.12840/issn.2255-4165.2016.04.01.011

de Wit, J. B. F., Das, E., & Vet, R. (2008). What works best: Objective statistics or a personal testimonial? *Health Psychology, 27*(1), 110–115. https://doi.org/10.1037/0278-6133.27.1.110

East, L., Jackson, D., O'Brien, L., & Peters, K. (2010). Storytelling: An approach that can help to develop resilience. *Nurse Researcher, 17*(3), 17–25. https://doi.org/10.7748/nr2010.04.17.3.17.c7742

Economic and Social Research Council. (2015). *Framework for research ethics*. https://esrc.ukri.org/funding/guidance-for-applicants/research-ethics/

Enders, C. K. (2010). *Applied missing data analysis*. The Guilford Press.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1–4. https://doi.org/10.11648/j.ajtas.20160501.11

European Commission. (2018). *General Data Protection Regulation (GDPR)*. https://eur-lex.europa.eu/eli/reg/2016/679/oj

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272–299. https://doi.org/10.1037/1082-989X.4.3.272

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. https://doi.org/10.3758/BF03193146

Ferretti, A., Hubbs, S., & Vayena, E. (2023). Global youth perspectives on digital health promotion: a scoping review. *BMC Digital Health, 1*, Article 25. https://doi.org/10.1186/s44247-023-00025-0

Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE Publications.
Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. Psychology Press. https://doi.org/10.4324/9780203838020
Fisher, W. R. (1984). Narration as a human communication paradigm: The case of public moral argument. *Communication Monographs, 51*(1), 1–22. https://doi.org/10.1080/03637758409390180
Fisher, W. R. (1985). The narrative paradigm: In the beginning. *Journal of Communication, 35*(4), 74–89. https://doi.org/10.1111/j.1460-2466.1985.tb02974.x
Fornell, C., & Larcker, D. F. (1981). *Evaluating structural equation models with unobservable variables and measurement error*. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.1177/002224378101800104
Fouka, G., & Mantzorou, M. (2011). Ethical considerations in qualitative research. *Health Science Journal, 5*(1), 3–14.
Gliner, J. A., Morgan, G. A., & Leech, N. L. (2017). *Research methods in applied settings: An integrated approach to design and analysis* (3rd ed.). Routledge. https://doi.org/10.4324/9781315266978
Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion, 11*(2), 87–98. https://doi.org/10.4278/0890-1171-11.2.87
Gravetter, F. J., & Wallnau, L. B. (2016). *Statistics for the behavioral sciences* (10th ed.). Cengage Learning.
Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701–721. https://doi.org/10.1037/0022-3514.79.5.701
Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2020). *Multivariate data analysis* (8th ed.). Cengage.
Hauser, D. J., Ellsworth, P. C., & Gonzalez, R. (2018). Are manipulation checks necessary? *Frontiers in Psychology, 9*, 998. https://doi.org/10.3389/fpsyg.2018.00998
Hauser, D. J., Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2018). *Common concerns with MTurk as a participant pool: Evidence and solutions*. In J. Payne (Ed.), *Handbook of research methods in behavioral economics* (pp. 357–377). Edward Elgar.
Heley, K., Kennedy‐Hendricks, A., Niederdeppe, J., & Barry, C. L. (2020). Reducing health‐related stigma through narrative messages. *Health Communication, 35*(7), 849–860. https://doi.org/10.1080/10410236.2019.1598614
Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior, 34*(5), 777–792. https://doi.org/10.1177/1090198106291963
Houston, T. K., Allison, J. J., Sussman, M., Horn, W., Holt, C. L., Trobaugh, J., ... & Hullett, S. (2011). Culturally appropriate storytelling to improve blood pressure: A randomized trial. *Annals of Internal Medicine, 154*(2), 77–84. https://doi.org/10.7326/0003-4819-154-2-201101180-00004
Ihaka, R., & Gentleman, R. (1996). R: A language for data analysis and graphics. *Journal of Computational and Graphical Statistics, 5*(3), 299–314. https://doi.org/10.2307/1390807
Israel, M., & Hay, I. (2006). *Research ethics for social scientists: Between ethical conduct and regulatory compliance*. SAGE. https://doi.org/10.4135/9781849209781
Kreuter, M. W., Green, M. C., Cappella, J. N., Slater, M. D., Wise, M. E., Storey, D., ... & Woolley, S. (2007). Narrative communication in cancer prevention and control: A framework to guide

research and application. *Annals of Behavioral Medicine, 33*(3), 221–235. https://doi.org/10.1007/BF02879904

Kreuter, M. W., & McClure, S. M. (2004). The role of culture in health communication. *Annual Review of Public Health, 25*, 439–455. https://doi.org/10.1146/annurev.publhealth.25.101802.123000

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*, 863. https://doi.org/10.3389/fpsyg.2013.00863

Larkey, L. K., & Hecht, M. L. (2010). A model of effects of narrative as culture-centric health promotion. *Journal of Health Communication, 15*(2), 114–135. https://doi.org/10.1080/10810730903528017

Leiner, D. J. (2019). *SoSci Survey (Version 3.2.55) [Computer software]*. https://www.soscisurvey.de

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, *140*, 1–55.

Lumley, T., Diehr, P., Emerson, S., & Chen, L. (2002). The importance of the normality assumption in large public health data sets. *Annual Review of Public Health, 23*, 151–169. https://doi.org/10.1146/annurev.publhealth.23.100901.140546

Luo, Y., Mohamad, E. M. W., Azlan, A. A., & Zhao, Y. (2025). How social media influences the health narratives in the context of SDGs: A systematic literature review. *SDGs Review, 5*, e05099. https://doi.org/10.47172/2965-730X.SDGsReview.v5.n03.pe05099

MacKenzie, S. B., & Lutz, R. J. (1989). An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *Journal of Marketing*, *53*(2), 48–65. https://doi.org/10.1177/002224298905300204

McAlister, A. L., Perry, C. L., & Parcel, G. S. (2008). How individuals, environments, and health behaviors interact: Social Cognitive Theory. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 169–188). Jossey-Bass.

McCornack, S., Morrison, K., & Warnick, B. (2012). *Reflect and relate: An introduction to interpersonal communication*. Bedford/St. Martin's.

McQueen, A., Kreuter, M. W., Kalesan, B., & Alcaraz, K. I. (2011). Understanding narrative effects: The impact of breast cancer survivor stories on message processing, attitudes, and beliefs among African American women. *Health Psychology, 30*(6), 674–682. https://doi.org/10.1037/a0025395

Meade, A. W., & Craig, S. B. (2012). *Identifying careless responses in survey data*. Psychological Methods, 17(3), 437–455. https://doi.org/10.1037/a0028085

Miller-Day, M., & Hecht, M. L. (2013). Narrative means to preventive ends: A narrative engagement framework for designing prevention interventions. *Health Communication, 28*(7), 657–670. https://doi.org/10.1080/10410236.2012.762861

Morales, A. C., Amir, O., & Lee, L. (2017). Keeping it real in experimental research: Understanding when, where, and how to enhance realism and measure consumer behavior. *Journal of Consumer Research, 44*(2), 465–476. https://doi.org/10.1093/jcr/ucx048

Morris, B. S., Chrysochou, P., Christensen, J. D., Orquin, J. L., Barraza, J. A., Zak, P. J., & Mitkidis, P. (2019). Stories vs. facts: Triggering emotion and action-taking on climate change. *Climatic Change, 154*(1–2), 19–36. https://doi.org/10.1007/s10584-019-02425-6

Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory, 18*(3), 407–425. https://doi.org/10.1111/j.1468-2885.2008.00328.x

Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research, 36*(1), 26–52. https://doi.org/10.1111/j.1468-2958.2009.01367.x

Murphy, S. T., Frank, L. B., Chatterjee, J. S., & Baezconde-Garbanati, L. (2013). Narrative versus non-narrative: The role of identification, transportation, and emotion in reducing health disparities. *Journal of Communication, 63*(1), 116–137. https://doi.org/10.1111/jcom.12007

Noar, S. M. (2006). A 10-year retrospective of research in health mass media campaigns: Where do we go from here? *Journal of Health Communication, 11*(1), 21–42. https://doi.org/10.1080/10810730500461059

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*(5), 625–632. https://doi.org/10.1007/s10459-010-9222-y

Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., ... & Yarkoni, T. (2015). Promoting an open research culture. *Science, 348*(6242), 1422–1425. https://doi.org/10.1126/science.aab2374

Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology, 11*(4), 327–344. https://doi.org/10.1080/13645570701401305

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). *Instructional manipulation checks: Detecting satisficing to increase statistical power*. Journal of Experimental Social Psychology, 45(4), 867–872. https://doi.org/10.1016/j.jesp.2009.03.009

Oschatz, C., Niederdeppe, J., & Liu, J. (2022). The role of prior attitudes in narrative persuasion. *Communication Monographs, 89*(3), 376–395. https://doi.org/10.1080/03637751.2021.2011344

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning*. University of Illinois Press.

Perdue, B. C., & Summers, J. O. (1986). *Checking the success of manipulations in marketing experiments*. Journal of Marketing Research, 23(4), 317–326. https://doi.org/10.1177/002224378602300401

Petty, R. E., & Cacioppo, J. T. (1986). Communication and persuasion: Central and peripheral routes to attitude change. *Springer*. https://doi.org/10.1007/978-1-4612-4964-1

Rath, J. M., Vallone, D., Xiao, H., Bennett, M., Cantrell, J., Hair, E., … Greenberg, M. (2021). Effects of branded health messages on e-cigarette attitudes, intentions, and behaviors: A longitudinal study among youth and young adults. *BMC Public Health, 21*(1), 1144. https://doi.org/10.1186/s12889-021-11092-1

Resnik, D. B. (2015). *What is ethics in research & why is it important?* National Institute of Environmental Health Sciences. https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs, 2*(4), 328–335. https://doi.org/10.1177/109019817400200403

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *The Lancet, 379* (9826), 1630–1640. https://doi.org/10.1016/S0140-6736(12)60072-5

Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (2018). The age of adolescence. *The Lancet Child & Adolescent Health, 2*(3), 223–228. https://doi.org/10.1016/S2352-4642(18)30022-1

Slater, M. D., & Rouner, D. (2002). Entertainment—education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory, 12*(2), 173–191. https://doi.org/10.1111/j.1468-2885.2002.tb00265.x

Shen, F., Sheer, V. C., & Li, R. (2015). Impact of narratives on persuasion in health communication: A meta-analysis. *Journal of Advertising, 44*(2), 105–113. https://doi.org/10.1080/00913367.2015.1018467

Singhal, A., & Rogers, E. M. (1999). *Entertainment-education: A communication strategy for social change*. Mahwah, NJ: Lawrence Erlbaum.

Steiner, P. M., Atzmüller, C., & Su, D. (2016). *Designing valid and reliable vignette experiments for survey research: A case study on the fair gender income gap*. *Journal of Methods and Measurement in the Social Sciences, 7*(2), 52–94. https://doi.org/10.2458/v7i2.20321

Sudman, S., Bradburn, N. M., & Schwarz, N. (1996). *Thinking about answers: The application of cognitive processes to survey methodology.* Jossey-Bass.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

United Nations Department of Economic and Social Affairs (UN DESA). (2013). *Definition of youth*. https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf

van de Vijver, F. J. R., & Hambleton, R. K. (1996). Translating tests: Some practical guidelines. *European Psychologist, 1*(2), 89–99. https://doi.org/10.1027/1016-9040.1.2.89

Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *The Lancet, 376*(9748), 1261–1271. https://doi.org/10.1016/S0140-6736(10)60809-4

Wickham, H., Averick, M., Bryan, J., Chang, W., McGowan, L. D., François, R., … Yutani, H. (2019). Welcome to the Tidyverse. *Journal of Open Source Software, 4*(43), 1686. https://doi.org/10.21105/joss.01686

World Health Organization. (n.d.). *Health promotion*. https://www.who.int/health-topics/health-promotion

World Health Organization. (2021). *Youth and health*. https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions

Yan, Y., He, Y., & Li, L. (2023). Why time flies? The role of immersion in short video usage behavior. *Frontiers in Psychology, 14*, Article 1127210. https://doi.org/10.3389/fpsyg.2023.1127210

8. AI-Disclosure

In accordance with the principles of academic transparency, the following digital tools were used in the preparation of this master thesis. After their use, the author has independently checked and edited the content where necessary, taking full responsibility for the final text and all interpretations. For more information on the nature and extent of the use of AI, please contact the author.

ChatGPT 4o	creating a German version of the abstract; support in translation, checking grammar, spelling and punctuation; rephrasing and tone of voice adjustments
ChatGPT o4-mini-high	code adjustments and solving bugs problem
DeeplPro	support in translation
Grammarly	checking grammar, spelling and punctuation

9. Appendix

Appendix 1. Stimuli texts (Vignettes)

1. Non-Storytelling:

A person looks directly into the camera with a calm and confident tone:

Did you know that the flu virus mutates every year, making it harder for your body to fight? That's where vaccination comes in. It trains your immune system to recognize the virus and fight it off before you get seriously ill. Without vaccination, your body is at a big risk of getting infected. Take control of your health. Get vaccinated today.

A black screen with text:
—— Learn more and schedule your flu shot through your local health authorities ——

2. Storytelling:

A person looks directly into the camera with a calm and confident tone:

Think of your body as a library, filled with knowledge to protect you. The flu virus? It's like a tricky new story that hasn't been filed yet — your immune system doesn't know how to handle it. A vaccination is the missing chapter, teaching your body how to recognize and fight the flu. Without vaccination, you're left unprepared for what's coming. Take control of your health. Get vaccinated today.

A black screen with text:
—— Learn more and schedule your flu shot through your local health authorities ——

Appendix 2. Questionnaire

Informed Consent

Dear participant, I would like to invite you to participate in my study on Youth's Perception of Storytelling in Pharmaceutical Campaigns. You need approximately 5-7 minutes to complete the whole survey.

Please take time to watch and read the following information carefully, and do not hesitate to ask questions.

Your participation in this study is voluntary. You can refuse to participate at any time, without having to give a reason, or also withdraw your agreement to participate once the study has already started. There will be no negative consequences for you if you refuse to participate or if you withdraw from this study early.

What are the requirements to take part in the study?
To participate, you must be between 18 and 24 years old and be able to understand oral and written information in English.

How will the data collected in this study be used?
When you participate in this study, I will assign you a random number that cannot be associated with you. You do not have to provide any personal information in this questionnaire if you do not wish to do so.

I have other questions. Who can answer them?
This research project is conducted by Andrei Androsov, BA and supervised by Univ.-Prof. Dr. Jörg Matthes. You can contact me by email (a12304661@unet.univie.ac.at) with any questions you may have before, during or after your participation.

—

Firstly, I want to get to know you better.

I identify as...

- male
- female
- non-binary
- prefer not to say

I am...

- 18-24 years old
- 25+ years old*
- prefer not to say*

My highest education is... (if you are currently enrolled, please select the highest degree you already received)

- High school, no diploma
- High school diploma or GED
- College, no degree
- Bachelor's degree
- Master's degree
- Doctorate degree
- prefer not to say

Now I want to know more about your health-related habits.

Section 0

Measure: *health-related habits and opinions*
Scale: *likert*

	always	often	sometimes	rarely	never
I regularly engage in physical activities (e.g., exercise, sports, walking)					
I visit a doctor for regular check-ups and health screenings					
I take precautions to prevent infectious diseases (e.g., handwashing, wearing masks during outbreaks)					
I actively seek health-related information from credible sources (e.g., doctors, health websites					

Please rate the following statements

	strongly agree	agree	neutral	disagree	strongly disagree
I trust medical professionals and public health organizations for health advice					
I think personal lifestyle choices have a significant impact on long-term health					
I believe that vaccination is an effective way to					

prevent infectious diseases					
I think health campaigns influence people's decisions about disease prevention					

Treatment groups only

Now you will see a short video campaign about the flu. Please watch it till the end and answer all the questions below:

VIDEO 1 or VIDEO 2

Control group only

Please answer all the questions below:

Both groups

Manipulation check

How would you describe the way information is presented in the video?

(Select one option)

— A direct and factual presentation of health information without metaphors or personal elements.

— A story-driven explanation using metaphors or narrative elements to convey the message.

— Unsure / I don't know.

Section 1
Hypothesis: *Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant*
Measure: *Perceived Personal Relevance*
Scale: *likert*

	strongly agree	agree	neutral	disagree	strongly disagree
The health risks mentioned in the campaign feel personally relevant to me.					
Select “disagree” here**					
I believe I am at risk for the health issues discussed in the campaign.					
The campaign addresses health concerns that are important to me.					

—

Section 2
Hypothesis: *Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign*
Measure: *Attitudes Toward the Campaign*
Scale: *semantic differential*

I find the campaign to be:

Beneficial 1 2 3 4 5 Harmful

Persuasive 1 2 3 4 5 Unpersuasive

Engaging 1 2 3 4 5 Boring

Trustworthy 1 2 3 4 5 Untrustworthy

—

Section 3
Hypothesis: *Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions.*
Measure: *Perceived Behavioral Control*
Scale: *likert*

	strongly agree	agree	neutral	disagree	strongly disagree
I am confident that I can follow the health advice provided in the campaign.					
Following the health advice in the campaign is entirely under my control.					
I have the resources and ability to implement the health recommendations from the campaign.					

—

Section 4

Hypothesis: *Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice*

Measure: *Intention to Follow Health Advice*

Scale: *likert*

	very likely	unlikely	neutral	unlikely	very unlikely
I intend to follow the health advice provided in the campaign.					
I plan to make the recommended health changes suggested by the campaign.					
I will try to adopt the health behaviors promoted in the campaign.					
Select “very likely” here**					

* age check (to be sure that participants are strictly between 18 and 24 y.o), if a participant selects this, their participation is not counted and the next page for them is Debriefing 1

** attention span check (to be sure that participants avoid selecting answers randomly), if a participant fails this check selecting any wrong answer, their participation is not counted and the next page for them is Debriefing 1

Debriefing 1 (* and **groups)

Thank you very much for participating in this study!

This research project is conducted by Andrei Androsov, BA and supervised by Univ.-Prof. Dr. Jörg Matthes. You can contact me by email (a12304661@unet.univie.ac.at) with any questions you may have before, during or after your participation.

Debriefing 2 (storytelling group)

Thank you very much for participating in this study!

The purpose of this research you just participated in is to find out how participants perceive storytelling in pharmaceutical campaigns. For this reason, some of the participants are provided with an advertisement that contains storytelling elements. You were one of them and in the video you have just seen I used storytelling.

Please keep this information about the purpose of the study for yourself and do not share it with others, who may also participate in the study, until May of 2025.

This research project is conducted by Andrei Androsov, BA and supervised by Univ.-Prof. Dr. Jörg Matthes. You can contact me by email (a12304661@unet.univie.ac.at) with any questions you may have before, during or after your participation.

Debriefing 3 (non-storytelling group)

Thank you very much for participating in this study!

The purpose of this research you just participated in is to find out how participants perceive storytelling in pharmaceutical campaigns. For this reason, some of the participants are provided with an advertisement that contains storytelling elements. You were not one of them and in the video you have just seen there is no storytelling.

Please keep this information about the purpose of the study for yourself and do not share it with others, who may also participate in the study, until May of 2025.

This research project is conducted by Andrei Androsov, BA and supervised by Univ.-Prof. Dr. Jörg Matthes. You can contact me by email (a12304661@unet.univie.ac.at) with any questions you may have before, during or after your participation.

Debriefing 4 (control group)

Thank you very much for participating in this study!

The purpose of this research you just participated in is to find out how participants perceive storytelling in pharmaceutical campaigns. For this reason, some of the participants of this survey are not provided with any advertisement. I did it in order to control initial attitudes and behaviours without any intervention. You were one of such participants who received no treatment at all.

Please keep this information about the purpose of the study for yourself and do not share it with others, who may also participate in the study, until May of 2025.

This research project is conducted by Andrei Androsov, BA and supervised by Univ.-Prof. Dr. Jörg Matthes. You can contact me by email (a12304661@unet.univie.ac.at) with any questions you may have before, during or after your participation.

Appendix 3. Full code (RStudio)

```
---
title: "HealthAds_Analysed"
output: html_document
date: "2025-06-27"
---
```{r}
knitr::opts_chunk$set(echo = TRUE)
```

```{r working directory}
getwd()
```

```{r setup, message=FALSE, warning=FALSE}
# 1) Installing libraries:
install.packages(c("readxl","dplyr","tidyr","psych","lavaan","semTools","car","rstatix","DescTools"))

# 2) Loading libraries
library(dplyr)      # data manipulation
library(tidyr)      # pivot_wider
library(psych)      # alpha(), describe()
library(lavaan)     # cfa()
library(semTools)   # measurementInvariance()
library(car)        # leveneTest()
library(rstatix)    # shapiro_test(), kruskal_test(), dunn_test(), levene_test()
library(DescTools)  # skewness(), kurtosis()
```

PHASE 1 -- DATA PREPARATION

```{r data preparation}
# 3) Reading and numerizing the recoded CSV (text labels)
```
```

```
df <- read.csv(
  "healthads_data_recoded.csv",
  stringsAsFactors = FALSE,
  check.names = FALSE
)
```

```{r data preparation}
library(dplyr)

ppr_items <- c(
  "Perceived Personal Relevance: The health risks mentioned in the campaign feel personally relevant to me",
  "Perceived Personal Relevance: I believe I am at risk for the health issues discussed in the campaign",
  "Perceived Personal Relevance: The campaign addresses health concerns that are important to me"
)
att_items <- c(
  "Attitude Toward the Campaign: Beneficial/Harmful",
  "Attitude Toward the Campaign: Persuasive/Unpersuasive",
  "Attitude Toward the Campaign: Engaging/Boring",
  "Attitude Toward the Campaign: Trustworthy/Untrustworthy"
)
pbc_items <- c(
  "Perceived Behavioral Control: I am confident that I can follow the health advice provided in the campaign",
  "Perceived Behavioral Control: Following the health advice in the campaign is entirely under my control",
  "Perceived Behavioral Control: I have the resources and ability to implement the health recommendations from the campaign"
)
int_items <- c(
  "Intention to Follow Health Advice: I intend to follow the health advice provided in the campaign",
  "Intention to Follow Health Advice: I plan to make the recommended health changes suggested by the campaign",
  "Intention to Follow Health Advice: I will try to adopt the health behaviors promoted in the campaign"
)

df_num <- df %>%
  mutate(
    # PR: Likert 1–5
    across(all_of(ppr_items), ~ case_when(
      . == "strongly agree"             ~ 5,
      . == "agree"                      ~ 4,
      . == "neither agree nor disagree" ~ 3,
      . == "disagree"                   ~ 2,
      . == "strongly disagree"          ~ 1,
      TRUE                              ~ NA_real_
    )),
    # Attitude: semantic differential 1–5
    across(all_of(att_items), ~ case_when(
      . == "Beneficial"    ~ 5,
      . == "Persuasive"    ~ 5,
      . == "Engaging"      ~ 5,
      . == "Trustworthy"   ~ 5,
      . == "2"             ~ 4,
      . == "3"             ~ 3,
      . == "4"             ~ 2,
      . == "Harmful"       ~ 1,
      . == "Unpersuasive"  ~ 1,
      . == "Boring"        ~ 1,
      . == "Untrustworthy" ~ 1,
      TRUE                 ~ NA_real_
    )),
    # PBC: Likert 1–5
    across(all_of(pbc_items), ~ case_when(
      . == "strongly agree"             ~ 5,
      . == "agree"                      ~ 4,
      . == "neither agree nor disagree" ~ 3,
      . == "disagree"                   ~ 2,
      . == "strongly disagree"          ~ 1,
      TRUE                              ~ NA_real_
```

```
    )),
    # Intention: Likert 1–5
    across(all_of(int_items), ~ case_when(
      . == "very likely"               ~ 5,
      . == "likely"                    ~ 4,
      . == "neither likely nor unlikely"~ 3,
      . == "unlikely"                  ~ 2,
      . == "very unlikely"             ~ 1,
      TRUE                             ~ NA_real_
    ))
  )

str(df_num[ , c(ppr_items, att_items, pbc_items, int_items)])
head(df_num[ , c(ppr_items, att_items, pbc_items, int_items)])
```

```{r data preparation}
# 4) Imputing median and creating indicator
all_items <- c(ppr_items, att_items, pbc_items, int_items)

for (col in all_items) {
  med <- median(df_num[[col]], na.rm = TRUE)
  df_num[[paste0(col, "_miss")]] <- is.na(df_num[[col]])
  df_num[[col]] <- ifelse(is.na(df_num[[col]]), med, df_num[[col]])
}

str(df_num[all_items])
head(df_num[all_items])

str(df_num[paste0(all_items, "_miss")])
```

```{r data preparation}
# 5) Normalizing all numeric items (z-score)
#Combining all item vectors into one
numeric_cols <- c(ppr_items, att_items, pbc_items, int_items)

#Z-score standardizing every one of those columns
df_num <- df_num %>%
  mutate(
    across(
      all_of(numeric_cols),
      ~ as.numeric(scale(.)),    # ensure result stays numeric
      .names = "{.col}_z"        # optional: append “_z” to each new column
    )
  )

#Quick check
str(df_num %>% select(ends_with("_z")))
head(df_num %>% select(ends_with("_z")))
```

```{r data preparation & descriptives}
# 6) Descriptive statistics: mean, SD, skewness, kurtosis
desc <- df_num %>%
  select(all_of(numeric_cols)) %>%
  summarise_all(list(
    Mean   = ~ mean(.),
    SD     = ~ sd(.),
    Skew   = ~ DescTools::Skew(.),
    Kurt   = ~ DescTools::Kurt(.)
  ))
print(desc)
```

```{r data preparation & descriptives, message=FALSE}
```

```
library(dplyr)
library(tidyr)
library(DescTools)
library(knitr)

# assuming ppr_items, att_items, pbc_items, intent_items defined as before
numeric_cols <- c(ppr_items, att_items, pbc_items, intent_items)

# computing long‑form descriptives
desc_table <- df_num %>%
  select(all_of(numeric_cols)) %>%
  summarise(across(
    everything(),
    list(
      Mean = ~ mean(.x,   na.rm = TRUE),
      SD   = ~ sd(.x,     na.rm = TRUE),
      Skew = ~ DescTools::Skew(.x, na.rm = TRUE),
      Kurt = ~ DescTools::Kurt(.x, na.rm = TRUE)
    )
  )) %>%
  pivot_longer(
    everything(),
    names_to   = c("Variable", "Statistic"),
    names_sep  = "_"
  ) %>%
  pivot_wider(
    names_from  = Statistic,
    values_from = value
  )

# rendering as HTML/Markdown table
kable(
  desc_table,
  digits = 2,
  caption = "Descriptive statistics (mean, SD, skewness, kurtosis) for all items"
)
```

```{r data preparation & descriptives}
# 6a) Overall count per experimental condition
group_counts <- df_text %>%
  count(`Randomizer: Code drawn`) %>%
  rename(Group = `Randomizer: Code drawn`, N = n) %>%
  mutate(Percent = round(N / sum(N) * 100, 1))
print(group_counts)

# 6b) Gender distribution within each condition
gender_group_counts <- df_text %>%
  count(`Randomizer: Code drawn`, Gender) %>%
  group_by(`Randomizer: Code drawn`) %>%
  mutate(
    N = n,
    Percent = round(100 * N / sum(N), 1)
  ) %>%
  rename(Group = `Randomizer: Code drawn`)
print(gender_group_counts)

# 6c) Education distribution within each condition
education_group_counts <- df_text %>%
  count(`Randomizer: Code drawn`, Education) %>%
  group_by(`Randomizer: Code drawn`) %>%
  mutate(
    N = n,
    Percent = round(100 * N / sum(N), 1)
  ) %>%
  rename(Group = `Randomizer: Code drawn`)
print(education_group_counts)
```

```

Overall Gender (N = 119):
Female: 70 participants (58.8%)
Male: 48 participants (40.3%)
Prefer not to say: 1 participant (0.8%)

This shows a modest female predominance in the sample, but both genders are well represented.

Overall Education (N = 119):
Bachelor's degree – the largest group at roughly half of the sample (~54%)
Master's degree – the next most common credential (~20%)
College, no degree and High school diploma/GED – each comprising around 10% of participants
Doctorate degree and High school, no diploma – small minorities (each under 7%)

In sum, most respondents hold at least a bachelor's degree, with a substantial subset having postgraduate qualifications, and only a small percentage having not completed high school or stopped at college without a degree.

Distribution & Normality: All items show means in the mid‑range (around 3–4 on a 1–5 scale), indicating moderately positive responses overall.

Skewness values are mostly slightly negative (–0.1 to –1.0), suggesting a mild ceiling tendency—particularly for the PBC items.

Kurtosis near zero (–1.1 to +2.0) implies no extreme outliers or heavy tails.

Implication: The item distributions are sufficiently symmetric and not overly peaked, making parametric tests (t‑tests) reasonably robust.

Overall, the sample is balanced enough and the item distributions are acceptable for proceeding with confirmatory factor analysis and subsequent hypothesis testing.

PHASE 2 - MEASUREMENT MODELS

```{r measurement models - Cronbach's Alpha, message=FALSE}
library(dplyr)
library(psych)

# 7) Cronbach's Alpha

#Defining item vectors
ppr_items  <- c(
  "Perceived Personal Relevance: The health risks mentioned in the campaign feel personally relevant to me",
  "Perceived Personal Relevance: I believe I am at risk for the health issues discussed in the campaign",
  "Perceived Personal Relevance: The campaign addresses health concerns that are important to me"
)
att_items  <- c(
  "Attitude Toward the Campaign: Beneficial/Harmful",
  "Attitude Toward the Campaign: Persuasive/Unpersuasive",
  "Attitude Toward the Campaign: Engaging/Boring",
  "Attitude Toward the Campaign: Trustworthy/Untrustworthy"
)
pbc_items  <- c(
  "Perceived Behavioral Control: I am confident that I can follow the health advice provided in the campaign",
  "Perceived Behavioral Control: Following the health advice in the campaign is entirely under my control",
  "Perceived Behavioral Control: I have the resources and ability to implement the health recommendations from the campaign"
)
intent_items <- c(
  "Intention to Follow Health Advice: I intend to follow the health advice provided in the campaign",
  "Intention to Follow Health Advice: I plan to make the recommended health changes suggested by the campaign",
  "Intention to Follow Health Advice: I will try to adopt the health behaviors promoted in the campaign"
)

#Filtering out the control group
df_exp <- df_num %>%
```
```

```
  filter(`Randomizer: Code drawn` %in% c("non-storytelling", "storytelling"))

#Computing Cronbach's alpha for each scale (experimental arms only)

cat("\n--- Personal Relevance α (exp only) ---\n")
print(alpha(df_exp[ppr_items]))

cat("\n--- Attitude α (exp only) ---\n")
print(alpha(df_exp[att_items]))

cat("\n--- Behavioral Control α (exp only) ---\n")
print(alpha(df_exp[pbc_items]))

cat("\n--- Intention α (exp only) ---\n")
print(alpha(df_exp[intent_items]))
```

Interpretation of Cronbach's α among experimental groups (storytelling + non-storytelling):

1. Personal Relevance (α ≈ 0.75)
- The three items all load consistently (no missing data; similar response distributions).
- α > 0.70 indicates acceptable internal consistency.
- Conclusion: The personal relevance scale is reliable for participants in both story and non-story conditions.

2. Attitude (α ≈ 0.82)
Four semantic-differential items show coherent response patterns (clustered toward the positive adjective, no missing data).
α well above 0.70 signals strong internal consistency.
Conclusion: The attitude scale reliably measures positive vs. negative campaign evaluations in the experimental arms.

3. Perceived Behavioral Control (α ≈ 0.78)
Three control items fully answered, with most respondents at the high end of the scale.
α > 0.70 confirms that these items form a coherent PBC construct.
Conclusion: The perceived behavioral control scale works reliably for those exposed to storytelling or factual messages.

4. Intention (α ≈ 0.80)
Three intention items exhibit balanced use of the 1–5 scale (slight tilt toward "likely").
α above 0.70 indicates the intention scale is internally consistent.
Conclusion: The intention scale is reliable when restricted to the two treatment conditions.

Overall: Excluding the control group and focusing only on the two experimental arms, each multi-item construct surpasses the conventional reliability threshold (α > 0.70), with complete response coverage and healthy distribution of answers. These scales are therefore suitable for subsequent confirmatory factor analysis and hypothesis testing.

```{r measurement models - CFA, message=FALSE, warning=FALSE}
library(dplyr)
library(lavaan)
library(tibble)

# 8) CFA

df_exp_short <- df_exp %>%
  rename(
    PR1 = `Perceived Personal Relevance: The health risks mentioned in the campaign feel personally relevant to me`,
    PR2 = `Perceived Personal Relevance: I believe I am at risk for the health issues discussed in the campaign`,
    PR3 = `Perceived Personal Relevance: The campaign addresses health concerns that are important to me`,
    AT1 = `Attitude Toward the Campaign: Beneficial/Harmful`,
    AT2 = `Attitude Toward the Campaign: Persuasive/Unpersuasive`,
    AT3 = `Attitude Toward the Campaign: Engaging/Boring`,
    AT4 = `Attitude Toward the Campaign: Trustworthy/Untrustworthy`,
    PBC1 = `Perceived Behavioral Control: I am confident that I can follow the health advice provided in the campaign`,
    PBC2 = `Perceived Behavioral Control: Following the health advice in the campaign is entirely under my control`,
    PBC3 = `Perceived Behavioral Control: I have the resources and ability to implement the health recommendations from the campaign`,
    IN1  = `Intention to Follow Health Advice: I intend to follow the health advice provided in the campaign`,
    IN2  = `Intention to Follow Health Advice: I plan to make the recommended health changes suggested by the campaign`,
    IN3  = `Intention to Follow Health Advice: I will try to adopt the health behaviors promoted in the campaign`


```

```
  )

model_short <- '
  PR  =~ PR1 + PR2 + PR3
  ATT =~ AT1 + AT2 + AT3 + AT4
  PBC =~ PBC1 + PBC2 + PBC3
  INT =~ IN1 + IN2 + IN3
'

fit_short <- cfa(
  model      = model_short,
  data       = df_exp_short,
  estimator  = "MLR",
  missing    = "fiml"
)

fitMeasures(fit_short, c("cfi","tli","rmsea","srmr")) %>% print()

parameterEstimates(fit_short, standardized = TRUE) %>%
  as_tibble() %>%
  filter(op == "=~") %>%
  select(lhs, rhs, std.all) %>%
  print()
```
Confirmatory Factor Analysis Results Interpretation

Model Fit Indices

CFI = 0.944
This Comparative Fit Index value is just below the conventional “excellent” cutoff of 0.95 yet well above the minimal acceptable threshold of 0.90, indicating a good degree of overall fit between the hypothesized four‑factor model and the observed data.

TLI = 0.925
The Tucker–Lewis Index likewise surpasses 0.90 (though again just under 0.95), confirming that the model improves substantially over a null (independence) baseline while penalizing for complexity.

RMSEA = 0.093
The Root Mean Square Error of Approximation is slightly above the ideal “close‑fit” target of 0.06 (or at most 0.08 for a reasonable fit). A value of 0.093 suggests the model fit is only marginal—there may be room to improve by freeing a few residual covariances or dropping a weak indicator.

SRMR = 0.078
The Standardized Root Mean Square Residual is under the 0.08 cutoff, indicating small average discrepancies between observed and model‑implied correlations.

Overall fit summary:
The model demonstrates good comparative fit (CFI/TLI > 0.90) and acceptable residuals (SRMR < 0.08), but the RMSEA indicates a modest misfit. In practice, the four‑factor structure is defensible, though you might consider minor modifications if strict RMSEA criteria are required.

All loadings ≥ 0.60 (most ≥ 0.70) demonstrate strong relationships between each observed item and its intended latent construct.

Lowest loading = 0.60 (PBC2) still exceeds the common 0.50 threshold, so each indicator meaningfully contributes to its factor.

Highest loading = 0.87 (AT4) shows exceptionally high coherence for the “Trustworthy/Untrustworthy” attitude item.

Conclusion:
Each scale exhibits clear convergent validity: the observed items load substantially on their intended factors. Combined with satisfactory CFI/TLI and SRMR (despite a slightly elevated RMSEA), these results support your measurement model and justify proceeding to hypothesis testing using these latent constructs.

```{r measurement models - invariance, message=FALSE, warning=FALSE}
library(lavaan)
```

```
library(dplyr)

# 9) Measuring invariance

# 9a) Subsetting to just the two experimental arms
df_inv <- df_exp_short %>%
  filter(`Randomizer: Code drawn` %in% c("non-storytelling","storytelling"))

# 9b) Making sure it's a factor in the correct order
df_inv <- df_inv %>%
  mutate(
    `Randomizer: Code drawn` = factor(
      `Randomizer: Code drawn`,
      levels = c("non-storytelling","storytelling")
    )
  )

# 9c) Running measurement invariance on short-name model

inv_results <- measurementInvariance(
  model     = model_short,
  data      = df_inv,
  group     = "Randomizer: Code drawn",
  estimator = "MLR"
)

print(inv_results)
```
Interpretation:

Configural invariance was supported (CFI = 0.905; RMSEA = 0.121), indicating that the same four-factor structure fits both groups.

Metric (loadings) invariance also held (ΔCFI = +0.001, ΔRMSEA = –0.005), so factor loadings can be meaningfully compared across conditions.

However, scalar (intercepts) invariance failed (ΔCFI = –0.069 > 0.01, ΔRMSEA = +0.032 > 0.015), meaning that item intercepts differ between the two groups.

As a result, strict/means invariance likewise did not hold (ΔCFI = –0.030, ΔRMSEA = +0.016).

Conclusion: We have evidence that the factor structure and loadings are equivalent in the “storytelling” and “non-storytelling” arms, but item intercepts are not.

This implies that observed mean differences on our scales may partly reflect differences in how items function across conditions rather than purely true differences in the latent constructs.

To proceed further, we should either adopt a partial invariance approach — freeing those intercepts that mis-fit — or interpret any group differences with caution, acknowledging that full scalar invariance was not achieved.

PHASE 3 -- HYPOTHESES TESTING (H1–H4)

```{r hypotheses testing}

# 10) Filtering control groups for t-tests

df_num <- df_num %>%
  filter(`Randomizer: Code drawn` %in% c("non-storytelling", "storytelling")) %>%
  mutate(
    GroupBinary = factor(`Randomizer: Code drawn`,
                         levels = c("non-storytelling", "storytelling"))
  )
```

```{r hypotheses testing, message=FALSE, warning=FALSE}

# 11) Creating composites


```

```
library(dplyr)

df_num <- df_num %>%
  filter(`Randomizer: Code drawn` %in% c("non-storytelling", "storytelling")) %>%
  mutate(
    GroupBinary = factor(
      `Randomizer: Code drawn`,
      levels = c("non-storytelling", "storytelling"),
    )
  )

ppr_items    <- c(
  "Perceived Personal Relevance: The health risks mentioned in the campaign feel personally relevant to me",
  "Perceived Personal Relevance: I believe I am at risk for the health issues discussed in the campaign",
  "Perceived Personal Relevance: The campaign addresses health concerns that are important to me"
)
att_items    <- c(
  "Attitude Toward the Campaign: Beneficial/Harmful",
  "Attitude Toward the Campaign: Persuasive/Unpersuasive",
  "Attitude Toward the Campaign: Engaging/Boring",
  "Attitude Toward the Campaign: Trustworthy/Untrustworthy"
)
pbc_items    <- c(
  "Perceived Behavioral Control: I am confident that I can follow the health advice provided in the campaign",
  "Perceived Behavioral Control: Following the health advice in the campaign is entirely under my control",
  "Perceived Behavioral Control: I have the resources and ability to implement the health recommendations from the
campaign"
)
intent_items <- c(
  "Intention to Follow Health Advice: I intend to follow the health advice provided in the campaign",
  "Intention to Follow Health Advice: I plan to make the recommended health changes suggested by the campaign",
  "Intention to Follow Health Advice: I will try to adopt the health behaviors promoted in the campaign"
)

df_num <- df_num %>%
  mutate(
    PersonalRelevance  = rowMeans(select(., all_of(ppr_items)),    na.rm = TRUE),
    Attitude           = rowMeans(select(., all_of(att_items)),    na.rm = TRUE),
    BehavioralControl  = rowMeans(select(., all_of(pbc_items)),    na.rm = TRUE),
    Intention          = rowMeans(select(., all_of(intent_items)), na.rm = TRUE)
  )

df_num %>%
  select(GroupBinary, PersonalRelevance, Attitude, BehavioralControl, Intention) %>%
  head(10) %>%
  print()
```

H1 - Storytelling in pharmaceutical campaigns makes youth perceive the health risks addressed in the campaign as personally relevant

```
```{r H1}
library(dplyr)
library(rstatix)

# 12. Assumption checks
df_num %>% group_by(GroupBinary) %>% shapiro_test(PersonalRelevance)
df_num %>% levene_test(PersonalRelevance~ GroupBinary)
```
```
```{r H1}
# 13. Two-sample t-test (assuming equal variances)
res_h1 <- df_num %>%
  t_test(PersonalRelevance ~ GroupBinary, var.equal = TRUE) %>%
  add_significance()

res_h1
```

```

There is no evidence that storytelling increases perceived personal relevance. Participants exposed to the narrative stimulus (storytelling) did not rate the campaign as more personally relevant than those in the non‑storytelling condition (t(88) = –0.54, p = .59). In other words, H1 is not supported: the mean PersonalRelevance scores were statistically indistinguishable between the two groups.

```{r H1}
# 14. Visualisation
library(ggplot2)
library(ggpubr)

df_num$GroupBinary <- factor(df_num$GroupBinary, levels = c("non-storytelling","storytelling"))

ggboxplot(df_num, x = "GroupBinary", y = "PersonalRelevance",
          color    = "GroupBinary",
          palette  = c("#00AFBB","#E7B800"),
          add      = "jitter",
          add.params = list(size = 2, alpha = 0.6)
) +
  stat_compare_means(method = "t.test", label = "p.format",
                     symnum.args = list(cutpoints = c(0, 0.001, 0.01, 0.05, 1),
                                        symbols   = c("***","**","*","ns")),
                     tip.length = 0.02) +
  labs(title    = "Perceived Personal Relevance by Condition",
       x        = "Condition",
       y        = "Perceived Personal Relevance",
       subtitle = "H1: two‑sample t-test result") +
  theme_minimal() +
  theme(legend.position = "none")
```

H2 - Storytelling in pharmaceutical campaigns increases positive attitudes among youth toward the campaign

```{r H2}
library(dplyr)
library(rstatix)

# 15. Assumption checks
df_num %>% group_by(GroupBinary) %>% shapiro_test(Attitude)
df_num %>% levene_test(Attitude~ GroupBinary)
```

```{r H2}
# 16. Two-sample t-test (assuming equal variances)
res_h2 <- df_num %>%
  t_test(Attitude ~ GroupBinary, var.equal = TRUE) %>%
  add_significance()

res_h2
```

There is no significant difference in campaign attitude between participants exposed to the narrative versus non-narrative stimuli. Specifically, the two-sample t-test yielded t(88) = –1.34, p = .18, indicating that storytelling did not meaningfully alter attitudes toward the campaign. Thus, H2 is not supported: mean Attitude scores did not differ between the two groups.

```{r H2}
# 17. Visualisation
library(ggplot2)
library(ggpubr)

df_num$GroupBinary <- factor(df_num$GroupBinary, levels = c("non-storytelling","storytelling"))

ggboxplot(df_num, x = "GroupBinary", y = "Attitude",
          color    = "GroupBinary",
          palette  = c("#6F9FD8","#E36C9E"),
          add      = "jitter",
```
```

```
        add.params = list(size = 2, alpha = 0.6)
) +
  stat_compare_means(method = "t.test", label = "p.format",
                     symnum.args = list(cutpoints = c(0, 0.001, 0.01, 0.05, 1),
                                        symbols   = c("***","**","*","ns")),
                     tip.length = 0.02) +
  labs(title    = "Attitude Towards Campaign by Condition",
       x        = "Condition",
       y        = "Attitude Towards Campaign",
       subtitle = "H2: two‑sample t-test result") +
  theme_minimal() +
  theme(legend.position = "none")
```

H3 - Storytelling in pharmaceutical campaigns makes youth feel more capable of taking recommended health actions

```{r H3}
library(dplyr)
library(rstatix)

# 18. Assumption checks
df_num %>% group_by(GroupBinary) %>% shapiro_test(BehavioralControl)
df_num %>% levene_test(BehavioralControl~ GroupBinary)
```

```{r H3}
# 19.Non-parametric t-test for H3 (Shapiro-Wulk is significant):
library(dplyr)
df_num %>%
  wilcox_test(BehavioralControl ~ GroupBinary) %>%
  add_significance()
```

The non-parametric Mann–Whitney U (Wilcoxon rank-sum) test comparing Perceived Behavioral Control in the two groups (non-storytelling vs. storytelling) yielded W = 978, p = .783. Because p is far above .05, we fail to reject the null hypothesis: there is no evidence that the distribution (or median) of Behavioral Control differs between the storytelling and non-storytelling conditions.

In other words, participants who saw the narrative stimulus felt just as capable of following the health advice as those who saw the factual (non-narrative) version.

```{r H3}
# 20. Visualisation
library(ggplot2)
library(ggpubr)

df_num$GroupBinary <- factor(df_num$GroupBinary, levels = c("non-storytelling","storytelling"))

ggboxplot(df_num, x = "GroupBinary", y = "BehavioralControl",
          color    = "GroupBinary",
          palette  = c("#F4D35E","#4CDAAC"),
          add      = "jitter",
          add.params = list(size = 2, alpha = 0.6)
) +
  stat_compare_means(method = "t.test", label = "p.format",
                     symnum.args = list(cutpoints = c(0, 0.001, 0.01, 0.05, 1),
                                        symbols   = c("***","**","*","ns")),
                     tip.length = 0.02) +
  labs(title    = "Perceived Behavioral Control by Condition",
       x        = "Condition",
       y        = "Perceived Behavioral Control",
       subtitle = "H3: non-parametric t-test result") +
  theme_minimal() +
  theme(legend.position = "none")
```

H4 - Storytelling elements in campaigns lead to a stronger intent among youth to follow health advice

```{r H4}
library(dplyr)
library(rstatix)

# 21. Assumption checks
df_num %>% group_by(GroupBinary) %>% shapiro_test(Intention)
df_num %>% levene_test(Intention~ GroupBinary)
```

```{r H4}
# 22.Non-parametric t-test for H4 (Shapiro-Wulk is significant):
library(dplyr)
df_num %>%
  wilcox_test(Intention ~ GroupBinary) %>%
  add_significance()
```

The Wilcoxon rank-sum test comparing Intention to follow the health advice between the non-storytelling (n_1=44) and storytelling (n_2=46) groups yielded W = 898, p = .353. Since p > .05, we fail to reject the null hypothesis. There is no evidence of a difference in intent between participants exposed to the narrative stimulus versus the factual stimulus. In other words, seeing the story‑driven version did not significantly change how likely young people said they were to follow the recommended health advice.

```{r H4}
# 23. Visualisation
library(ggplot2)
library(ggpubr)

df_num$GroupBinary <- factor(df_num$GroupBinary, levels = c("non-storytelling","storytelling"))

ggboxplot(df_num, x = "GroupBinary", y = "Intention",
          color    = "GroupBinary",
          palette  = c("#2D9CDB","#FF715B"),
          add      = "jitter",
          add.params = list(size = 2, alpha = 0.6)
) +
  stat_compare_means(method = "t.test", label = "p.format",
                     symnum.args = list(cutpoints = c(0, 0.001, 0.01, 0.05, 1),
                                        symbols   = c("***","**","*","ns")),
                     tip.length = 0.02) +
  labs(title    = "Intention to Follow Health Advice by Condition",
       x        = "Condition",
       y        = "Intention to Follow Health Advice",
       subtitle = "H4: non-parametric t-test result") +
  theme_minimal() +
  theme(legend.position = "none")
```

PHASE 4 - COVARIATES MEASUREMENT

```{r covariates measurement, message=FALSE, warning=FALSE}

# 24) Defining columns
opinions_items <- c(
  "Opinions: I trust medical professionals and public health organizations for health advice",
  "Opinions: I think personal lifestyle choices have a significant impact on long-term health",
  "Opinions: I believe that vaccination is an effective way to prevent infectious diseases",
  "Opinions: I think health campaigns influence people's decisions about disease prevention"
)

habits_items <- c(
  "Habits: I regularly engage in physical activities (e.g., exercise, sports, walking)",
  "Habits: I visit a doctor for regular check-ups and health screenings",
  "Habits: I take precautions to prevent infectious diseases (e.g., handwashing, wearing masks during outbreaks)",
  "Habits: I actively seek health-related information from credible sources (e.g., doctors, health websites)"
)
```

```
df_cov <- df %>% select(all_of(opinions_items), all_of(habits_items))
```

```{r covariates measurement}
# 25) pivot longer, count and percent
cov_long <- df_cov %>%
  pivot_longer(
    cols = everything(),
    names_to  = "Variable",
    values_to = "Response"
  )

cov_summary <- cov_long %>%
  filter(!is.na(Response)) %>%
  group_by(Variable, Response) %>%
  summarize(Count = n(), .groups="drop") %>%
  group_by(Variable) %>%
  mutate(Percent = Count / sum(Count) * 100) %>%
  arrange(Variable, desc(Percent))

# 25a) printing as a big table
kable(cov_summary, digits=1,
      col.names = c("Item", "Response", "N", "%"))
```

```{r covariates measurement}
# 26) numeric summaries
df_cov_num <- df_cov %>%
  mutate(across(all_of(opinions_items), ~ case_when(
    . == "strongly agree"             ~ 5,
    . == "agree"                      ~ 4,
    . == "neither agree nor disagree" ~ 3,
    . == "disagree"                   ~ 2,
    . == "strongly disagree"          ~ 1,
    . == "prefer not to say"          ~ NA_real_,
    TRUE                              ~ NA_real_
  ), .names = "num_{col}")) %>%
  mutate(across(all_of(habits_items), ~ case_when(
    . == "always"      ~ 5,
    . == "often"       ~ 4,
    . == "sometimes"   ~ 3,
    . == "rarely"      ~ 2,
    . == "never"       ~ 1,
    . == "prefer not to say" ~ NA_real_,
    TRUE               ~ NA_real_
  ), .names = "num_{col}"))

num_cols <- grep("^num_", names(df_cov_num), value = TRUE)

cov_stats <- df_cov_num %>%
  summarize(across(all_of(num_cols),
                   list(
                     mean   = ~ mean(.x, na.rm=TRUE),
                     median = ~ median(.x, na.rm=TRUE),
                     sd     = ~ sd(.x, na.rm=TRUE)
                   ),
                   .names = "{col}_{fn}"
  ))

cov_stats_long <- cov_stats %>%
  pivot_longer(everything(),
               names_to  = c("Variable", "Stat"),
               names_sep = "_",
               values_to = "Value") %>%
  pivot_wider(names_from = Stat, values_from = Value) %>%
  mutate(
```

```
    Variable = sub("^num_", "", Variable)
  )

cov_stats_long <- cov_stats %>%
  pivot_longer(
    cols = everything(),
    names_to  = c("Variable", "Stat"),
    names_pattern = "^(.*)_(mean|median|sd)$",
    values_to = "Value"
  ) %>%
  pivot_wider(names_from = Stat, values_from = Value) %>%
  mutate(Variable = sub("^Num_", "", Variable))

kable(
  cov_stats_long,
  digits    = 2,
  col.names = c("Item", "Mean", "Median", "SD")
)

```

Participants reported strong agreement that personal lifestyle choices have a significant impact on long-term health (mean 4.50, median 5, SD 0.58) and that they trust medical professionals and public health organizations for health advice (mean 4.21, median 4, SD 0.70). Belief in vaccination as an effective means to prevent infectious diseases was also high (mean 4.18, median 4, SD 0.87), and most agreed that health campaigns influence people's decisions about disease prevention (mean 4.05, median 4, SD 0.70).

When it comes to habits, regular engagement in physical activities scored moderately (mean 3.63, median 4, SD 1.03), whereas visiting a doctor for routine check-ups and screenings was less common (mean 2.82, median 3, SD 0.97). Taking precautions such as hand-washing and mask-wearing was endorsed (mean 3.99, median 4, SD 0.89), but active seeking of health-related information from credible sources was only around the midpoint (mean 3.36, median 3, SD 1.12), reflecting considerable variability in this behavior.

Overall, respondents show consistently positive opinions about the importance of lifestyle, trust in professionals, and the efficacy of vaccines and campaigns, while their actual health-related behaviors vary more widely—particularly in routine medical visits and information-seeking activities.

PHASE 5 - CONTROL GROUP ANALYSIS

```{r control group, warning=FALSE, message=FALSE}

# 27) Loading libraries
library(dplyr)
library(rstatix)
library(purrr)

# 28) Reading the full recoded dataset (with control + both stimulus arms)
df_full <- read.csv(
  "healthads_data_recoded.csv",
  stringsAsFactors = FALSE,
  check.names      = FALSE
)
```

```{r control group}
# 29) Defining item-name vectors exactly as in the CSV
ppr_items   <- c(
  "Perceived Personal Relevance: The health risks mentioned in the campaign feel personally relevant to me",
  "Perceived Personal Relevance: I believe I am at risk for the health issues discussed in the campaign",
  "Perceived Personal Relevance: The campaign addresses health concerns that are important to me"
)
att_items   <- c(
  "Attitude Toward the Campaign: Beneficial/Harmful",
  "Attitude Toward the Campaign: Persuasive/Unpersuasive",
  "Attitude Toward the Campaign: Engaging/Boring",
  "Attitude Toward the Campaign: Trustworthy/Untrustworthy"
```

```
)
pbc_items    <- c(
  "Perceived Behavioral Control: I am confident that I can follow the health advice provided in the campaign",
  "Perceived Behavioral Control: Following the health advice in the campaign is entirely under my control",
  "Perceived Behavioral Control: I have the resources and ability to implement the health recommendations from the
campaign"
)
intent_items <- c(
  "Intention to Follow Health Advice: I intend to follow the health advice provided in the campaign",
  "Intention to Follow Health Advice: I plan to make the recommended health changes suggested by the campaign",
  "Intention to Follow Health Advice: I will try to adopt the health behaviors promoted in the campaign"
)
```


```{r control group}
# 30) Numerizing
df5 <- df_full %>%
  mutate(
    across(all_of(ppr_items), ~ case_when(
      . == "strongly agree"            ~ 5,
      . == "agree"                     ~ 4,
      . == "neither agree nor disagree" ~ 3,
      . == "disagree"                  ~ 2,
      . == "strongly disagree"         ~ 1,
      TRUE                             ~ NA_real_
    )),
    across(all_of(att_items), ~ case_when(
      . == "Beneficial"     ~ 5,
      . == "Persuasive"     ~ 5,
      . == "Engaging"       ~ 5,
      . == "Trustworthy"    ~ 5,
      . == "4"              ~ 2,
      . == "3"              ~ 3,
      . == "2"              ~ 4,
      . == "Harmful"        ~ 1,
      . == "Unpersuasive"   ~ 1,
      . == "Boring"         ~ 1,
      . == "Untrustworthy"  ~ 1,
      TRUE                  ~ NA_real_
    )),
    across(all_of(pbc_items), ~ case_when(
      . == "strongly agree"            ~ 5,
      . == "agree"                     ~ 4,
      . == "neither agree nor disagree" ~ 3,
      . == "disagree"                  ~ 2,
      . == "strongly disagree"         ~ 1,
      TRUE                             ~ NA_real_
    )),
    across(all_of(intent_items), ~ case_when(
      . == "very likely"               ~ 5,
      . == "likely"                    ~ 4,
      . == "neither likely nor unlikely"~ 3,
      . == "unlikely"                  ~ 2,
      . == "very unlikely"             ~ 1,
      TRUE                             ~ NA_real_
    ))
  )
```

```{r control group}
df5 <- df5 %>%
  mutate(
    PersonalRelevance  = rowMeans(select(., all_of(ppr_items)),    na.rm = TRUE),
    Attitude           = rowMeans(select(., all_of(att_items)),    na.rm = TRUE),
    BehavioralControl  = rowMeans(select(., all_of(pbc_items)),    na.rm = TRUE),
    Intention          = rowMeans(select(., all_of(intent_items)), na.rm = TRUE)
```

```
  )
```

```{r control group}
df5 <- df5 %>%
  filter(
    !is.na(PersonalRelevance),
    !is.na(BehavioralControl),
    !is.na(Intention)
  )
```

```{r control group}
df5 <- df5 %>%
  mutate(
    Condition = case_when(
      `Randomizer: Code drawn` == "control"                              ~ "control",
      `Randomizer: Code drawn` %in% c("storytelling","non-storytelling")  ~ "stimuli",
      TRUE                                                               ~ NA_character_
    ),
    Condition = factor(Condition, levels = c("control","stimuli"))
  )
```

```{r control group}
# 31) Counting conditions allocation
df5 %>%
  count(Condition) %>%
  mutate(percent = round(n / sum(n) * 100, 1)) %>%
  print()
```

```{r control group}
# 32) Running tests for control and stimuli

library(purrr)
library(rlang)
dvs <- c("PersonalRelevance","Attitude","BehavioralControl","Intention")
phase5_results <- map_dfr(dvs, function(dv) {
  # Normality by group
  sw <- df5 %>%
    group_by(Condition) %>%
    shapiro_test(!!sym(dv))
  # Variance homogeneity
  lev <- df5       %>%
    levene_test(as.formula(paste0(dv, "~ Condition")))

  # Choose parametric or non-parametric
  if(all(sw$p > .05) && lev$p > .05) {
    test <- df5 %>%
      t_test(as.formula(paste(dv, "~ Condition")), var.equal = TRUE)
  } else {
    test <- df5 %>%
      wilcox_test(as.formula(paste0(dv, "~ Condition")))
  }

  test %>%
    add_significance() %>%
    mutate(DV = dv)
})
```

```{r control group}
# 33) Printing results
phase5_results %>%
  select(DV, group1, group2, n1, n2, statistic, p, p.signif) %>%
  print()
```

```

Perceived Personal Relevance (H1) showed no difference between Control and Stimuli ($p = .95$).
Attitude toward the campaign (H2) also did not differ ($p = .66$).
Perceived Behavioral Control (H3) was significantly higher in the Stimuli group than in Control ($p = .0023$), indicating that simply exposing participants to any campaign message—whether narrative or not—boosted their confidence in following the advice.
Intent to follow health advice (H4) again showed no difference ($p = .40$).

Overall, only the behavioral‑control construct differed: participants who saw a campaign (story or non-story) felt more able to carry out its recommendations than those in the no-campaign Control condition, while relevance, attitude, and intention were unchanged.
```

Abstract

In the context of growing interest in youth-oriented health communications, this study examines the effectiveness of storytelling in pharmaceutical campaigns based on a three-condition experiment (n=119). The study draws on Health Belief Model, Theory of Planned Behaviour, Social Cognitive Theory, and the Narrative Paradigm Theory. Four hypotheses were tested in a quantitative analysis: that narrative presentation of information increases perceived personal relevance, forms a more positive attitude toward the campaign, enhances perceived control, and strengthens the intention to follow health advice compared to non-narrative presentation. The results did not reveal statistically significant differences between the storytelling and non-storytelling groups on all key variables ($p > 0.05$). However, additional analysis showed that any campaign exposure, regardless of the form of presentation, increased the subjective sense of control compared to the control group ($p = 0.0023$). Thus, the results emphasize the importance of informational impact as such and point to the need for further adaptation of storytelling to the interests and expectations of young audiences. The study contributes to the understanding of the perception of narrative health messages and offers practical recommendations for pharmaceutical communication strategies.

Zusammenfassung

Vor dem Hintergrund des wachsenden Interesses an jugendorientierter Gesundheitskommunikation untersucht diese Studie die Wirksamkeit von Storytelling in pharmazeutischen Kampagnen anhand eines Experiments mit drei Bedingungen (n = 119). Die Studie stützt sich auf das Gesundheitsüberzeugungsmodell, die Theorie des geplanten Verhaltens, die soziale Kognitionstheorie und die Narrative Paradigm Theory. In einer quantitativen Analyse wurden vier Hypothesen getestet: dass die narrative Präsentation von Informationen die wahrgenommene persönliche Relevanz erhöht, eine positivere Einstellung gegenüber der Kampagne hervorruft, die wahrgenommene Kontrolle verbessert und die Absicht, Gesundheitsratschläge zu befolgen, im Vergleich zur nicht-narrativen Präsentation stärkt. Die Ergebnisse zeigten keine statistisch signifikanten Unterschiede zwischen der Storytelling- und der Nicht-Storytelling-Gruppe bei allen Schlüsselvariablen ($p > 0,05$). Eine zusätzliche Analyse zeigte jedoch, dass jede Kampagnenkontakt, unabhängig von der Darstellungsform, das subjektive Kontrollgefühl im Vergleich zur Kontrollgruppe erhöhte ($p = 0,0023$). Die Ergebnisse unterstreichen somit die Bedeutung der Informationswirkung an sich und weisen auf die Notwendigkeit hin, das Storytelling weiter an die Interessen und Erwartungen junger Zielgruppen anzupassen. Die Studie trägt zum Verständnis der Wahrnehmung narrativer Gesundheitsbotschaften bei und liefert praktische Empfehlungen für pharmazeutische Kommunikationsstrategien.

Keywords: storytelling, narrative communication, non-narrative communication, pharmaceutical campaigns, youth health communication, perceived personal relevance, attitude toward campaign, perceived behavioral control, intention to follow health advice, experimental study, health communication effectiveness

Schlüsselwörter: Storytelling, narrative Kommunikation, nicht-narrative Kommunikation, Pharmakampagnen, Gesundheitskommunikation für Jugendliche, wahrgenommene persönliche Relevanz, Einstellung zur Kampagne, wahrgenommene Verhaltenskontrolle, Intention, Gesundheitsempfehlungen zu folgen, experimentelle Studie, Effektivität der Gesundheitskommunikation