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Master Thesis

From consideration to purchase intention in the Swiss over-the-counter (OTC) drug market

An experimental analysis of the effects of information source, brand, and price on Millennials and Generation Z

Deposed by

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ABSTRACT

As the Swiss over-the-counter (OTC) drug market undergoes digital transformation and purchasing power shifts to Millennials and Generation Z, a central question remains: what factors influence a young consumer's decision to choose a brand, a generic, a pharmacist's advice, or an influencer's recommendation? Research in classical signaling emphasizes brand and price, while digital-marketing literature highlights importance of online content. However, there has been no joint and mechanistic testing across generations in a healthcare context where choices carry physical, not just financial, stakes.

This thesis addresses this gap through a bilingual scenario-based experiment among 518 Swiss Millennials and Gen Z consumers. The study used a 2*2*2 between-subjects design for brand, price, and information source. It also tested the therapeutic category (pain vs. cold/flu) within subjects. This setup explained purchase intention through two paths. First, perceived quality and perceived risk converge on perceived value. Second, source credibility relies on expertise and trust. Data were analyzed using mixed factorial ANOVA and bootstrapped mediation models (PROCESS).

The study highlights three main results. First, classic models apply to Swiss OTC products: quality creates value, risk reduces it, and credibility drives influence. Second, standard market signals failed. The unknown brand increased risk and lowered quality, while generics generated much higher purchase intention ($p < .001$). This supports a zero-equity boundary in signaling theory: signals require capital. Price penalties were stronger among Millennials and under pharmacist recommendation. Third, professional advice was the strongest factor. Pharmacists outperformed social-media content creators by 1.3 points on the seven-point intention scale, four times the brand effect in explained variance ($\eta p^2 = .18$ vs. .04), with ~70% of the effect driven by credibility. This effect was stable across categories and generations, but expertise drove Millennials whereas trustworthiness drove Generation Z.

The study validates the dual-pathway architecture and the suspension of the price–quality association. Managerially, pharmacist recommendations remain the strongest conversion lever. Generics can win young consumers without price inducements, new brands should build familiarity before premium positioning, and influencers need sustained, trust-centered exposure. Ultimately, in this digital age, trust in people matters more than packaging.

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LIST OF ABBREVIATIONS

Abbreviation	Definition
5A	Aware, Appeal, Ask, Act, Advocate
ANOVA	Analysis of Variance
ATTOGEN	ATtitude TOwards GENerics
CHF	Swiss Franc
CI	Confidence Interval
EHBM	Extended Health Belief Model
ELM	Elaboration Likelihood Model
EMM	Estimated Marginal Mean
EVM	Experimental Vignette Methodology
eWOM	Electronic Word-of-Mouth
FMH	Swiss Medical Association
FPH	Swiss professional pharmacy credential
FSO	Federal Statistical Office
HBM	Health Belief Model
HLS-EU-Q	European Health Literacy Survey Questionnaire
HOE	Hierarchy of Effects
ICPC-2	International Classification of Primary Care
LISREL	Linear Structural Relations
MoFu	Middle of the Funnel
OHIS	Online Health Information Seeking
OTC	Over-the-Counter
PLS	Partial Least Squares
PP	Pharmacist Prescribing
PROCESS	Hayes' PROCESS macro for mediation and moderation analysis
SD	Standard Deviation
SE	Standard Error
SHARE	Survey of Health, Ageing and Retirement in Europe
S-O-R	Stimulus-Organism-Response
SPSS	Statistical Package for the Social Sciences
TPA	Therapeutic Products Act
TPB	Theory of Planned Behavior
WHO	World Health Organization

INTRODUCTION

Research context

The healthcare market in Switzerland represents a major economic challenge. In 2024, the Swiss pharmaceutical market as a whole generated sales of CHF 7.7 billion (IQVIA, 2024). At the same time, the specific consumer healthcare market, valued at public retail prices, amounted to CHF 2.8 billion (up 1.1% year-on-year). Within the latter, OTC medicines are the dominant segment, accounting for 65.2% of sales, or approximately CHF 1.83 billion, an increase of 2.2% compared to fiscal year 2023 (IQVIA, 2024).

This high level of consumption is part of a structural effort by health authorities to promote self-medication for minor illnesses in order to control overall public health costs (Hughes et al., 2001). This trend is not new. Data from the Swiss Health Survey reveal that the proportion of the Swiss population having consumed at least one medication in the seven days preceding the survey has risen steadily over three decades, and in 2022, the consumption of analgesics (the first product category examined in this thesis) has more than doubled, increasing from 12% of the population in 1992 to 26% in 2022 (FSO, 2024).

Millennials and Generation Z now represent more than half of the Swiss working population (FSO, 2025), which makes their consumption behavior increasingly relevant for the OTC market.

In this context, the revision of the Therapeutic Products Act (TPA), in force since January 1, 2019, widened the range of medicines available without a prescription and gave pharmacists the authority to dispense selected prescription medicines after a documented consultation (Swissmedic, 2018, 2019). This placed pharmacists at the center of the self-medication ecosystem. The reform is described in more detail later.

Problem statement

This "liberalization" of the market creates a major tension. On the one hand, increased and easier accessibility encourages patients to behave as autonomous consumers. On the other hand, this autonomy masks an objective clinical risk as studies show that nearly 15.9% of regular pharmacy patients are exposed to potential drug interactions between their prescribed treatments and OTC drugs purchased for self-medication (Indermitte et al., 2007). At the national level, the scale of drug-related problems is substantial: approximately 20,000 people

are hospitalized each year in Switzerland due to medication-related issues (Amador-Fernández et al., 2023), underscoring the clinical stakes of unsupervised self-medication.

This problem is worse for younger people. While Millennials and Gen Z are surrounded by digital information, this does not automatically lead to better health decisions. According to the Health Literacy Survey Switzerland 2019-21, 44% of the Swiss population has low digital health literacy skills, and 28% have problematic digital health literacy (De Gani et al., 2021). Generation Z is a generation that is very familiar with medical information because of the internet. However, they also tend to avoid information that makes them anxious. They also doubt the credibility of the information they find online (Jia & Li, 2024).

Although these generations are highly receptive to digital stimuli and social influence for certain purchasing categories (Djafarova & Bowes, 2021), the decision to purchase a medication differs fundamentally from hedonistic consumption. It requires weighing trust in an information source against perceived risk (Aufegger et al., 2021). The central problem of this thesis is therefore to understand the mechanisms that drive these consumers, torn between digital convenience (Alarsali & Aghaei, 2022) and the imperative of clinical safety, to move from a simple interest in a health product to a genuine intention to purchase.

Objectives and research question

The objective of this research is to decipher the decision-making behavior of younger generations in the Swiss OTC market by using Kotler's 5A model (Aware, Appeal, Ask, Act, Advocate), a framework whose applicability to patient engagement in healthcare settings has been explored by Hung et al. (2023).

The study focuses specifically on the "Middle of the Funnel" (MoFu) to determine how informational and marketing signals (brand awareness, price, pharmacist advice vs. digital influence) interact to transform the consideration stage (Appeal) into purchase intention (Ask/Act). To capture the nuances of involvement, this dynamic will be compared across two distinct therapeutic categories: pain relievers (pain) and cold/flu medications.

To address these issues, the following research question is posed:

"How do brand type, price, and recommendation source affect purchase intention for OTC medicines among Swiss Millennials and Generation Z consumers, and through which perceived evaluation and source-credibility processes do these effects operate? And to what extent do these effects differ across therapeutic category and generation? "

LITERATURE REVIEW

The OTC drug market in Switzerland

Market overview and the structural rise of self-medication

In order to comprehend this market, it is necessary to undertake a detailed segmentation of its consumer base. Recent data from the Federal Statistical Office (FSO) indicates that in 2024, members of Generation Z and Millennials collectively constituted 53.3% of Switzerland's economically active population (FSO, 2025). From a managerial perspective, these groups represent most of the current purchasing power, but will also shape future health behaviors.

Self-medication, part of self-care, is when people take medicine to treat their self-diagnosed illnesses or symptoms. This is how the World Health Organization (WHO, 2000) defines it and it is now a common way of thinking about healthcare. Bennadi (2014) situates this practice within a global framework, emphasising that it is driven by a convergence of factors: the growing desire for personal autonomy in health decisions, the rising cost of professional medical consultations, and the expanding accessibility of pharmaceutical information. Within the Swiss context, this structural trend aligns with health authorities proactively promoting health literacy and personal responsibility as mechanisms to contain overall healthcare spending (Conseil fédéral suisse, 2020).

Hughes et al. (2001) thoroughly analyze the pros and cons of this model. On the plus side, they talk about lower healthcare costs, direct availability of treatment for minor illnesses, and more patient autonomy. On the risk side, however, they document the potential for incorrect self-diagnosis, the masking of serious symptoms through symptomatic relief, dangerous drug interactions with prescribed treatments, and the risk of medication misuse or abuse. The two sides of self-medication, which can be both empowering and dangerous, are the main tension that underlies the whole OTC purchasing journey looked at in this thesis.

The structural rise of self-medication in Switzerland is further documented by national survey data. According to the results of the Swiss Health Survey 2022, 55% of the resident population aged 15 and over had consumed at least one medication in the seven days preceding the survey. This figure has increased continuously since systematic measurement began in 1992. The increase is particularly pronounced for analgesics, whose consumption has more than doubled over this period, from 12% in 1992 to 26% in 2022 (FSO, 2024). This longitudinal trend confirms that the OTC market expansion documented by IQVIA (2024) is not a recent

phenomenon, but rather the product of a three-decade structural transformation in Swiss health behaviour.

The Swiss pharmacy landscape: a distinctive institutional context

Swiss consumers use OTC medicines within a distinctive institutional setting. In 17 of the 26 cantons, physicians may dispense medicines directly to patients under the Selbstdispensation system, which reduces pharmacy density in those regions (FMH, 2026). Community pharmacies also operate in an open competitive environment, with no restriction on new openings and growing competition from chains and mail-order channels (Guignard & Bugnon, 2006). This context has pushed pharmacies toward a patient-centered model of pharmaceutical care.

The evolution of the pharmacist's role in Switzerland must be understood as the culmination of a multi-decade institutional transformation, not merely as a consequence of the 2019 legislative reform. Hersberger and Messerli (2016) trace the development of clinical pharmacy in Switzerland and document how community pharmacists have progressively expanded their scope of practice beyond traditional dispensing to include medication review, adherence counselling, and disease management services, particularly for older patients. This gradual professionalization of the pharmacist's clinical role created the institutional preconditions for the regulatory expansion of pharmacist prescribing authority introduced by the revised TPA in 2019.

More recently, Maes et al. (2019) have provided the most detailed empirical observation of actual counselling behavior in Swiss community pharmacies. Their study, conducted through non-participatory observation of 556 prescription encounters across 18 community pharmacies in Basel, reveals a significant gap between the ideal of pharmaceutical care and daily practice. Counselling was provided to 66.0% of customers, covering on average 2.9 themes per encounter. However, pharmacists proposed few additional activities beyond standard dispensing and performed limited cognitive pharmaceutical services. This finding is very important for the present study. Theoretically, pharmacists are in charge of making sure that OTC medicines are safe, but it is not clear how often pharmacists actually do this in practice.

The 2019 regulatory reform and the pharmacist as clinical gatekeeper

The range of options available to consumers has undergone a major regulatory disruption with the revision of the Therapeutic Products Act (TPA), which came into force on January 1, 2019. The former Category C was abolished, triggering the re-evaluation of approximately 650

medicines (Swissmedic, 2019). A large proportion of these products were transferred to category D (available in pharmacies and drugstores with specialist advice). At the same time, some products that were in category C were moved to category E. This means that these products can be sold without a prescription in any store. (Swissmedic, 2018; Confédération Suisse, 2026). While some products were reclassified as category B, pharmacists could prescribe them without a doctor's prescription, but they had to conduct and document a specialized consultation. Because of this, pharmacists became very important in the self-medication ecosystem. (Swissmedic, 2018 ; Confédération Suisse, 2025).

Table 1 - Swissmedic categories after the 2019 reorganization

Swissmedic classification (post-2018)	Conditions for dispensing	Degree of clinical intervention required	Authorized distribution channel
Category A	Non-renewable prescription	Absolute medical supervision (by a doctor)	Pharmacies
Category B	Renewable prescription	Medical supervision/pharmacological expertise (new, allows pharmacists to dispense cat. B products even without a doctor's prescription in urgent cases such as cystitis)	Pharmacies
Category D	Without prescription, with specialized advice	Benefit/risk assessment by an expert Pharmacies	Pharmacies, drugstores
Category E	Without prescription, without advice	Self-assessment by the patient (virtually no risk)	All shops (supermarkets, etc.)

Amador-Fernández et al. (2023) confirm that this legal change is more than just a small administrative change. It requires a big change in how Swiss pharmacies do things. The pharmacist is moving from a role as a dispenser to that of a central figure in self-care.

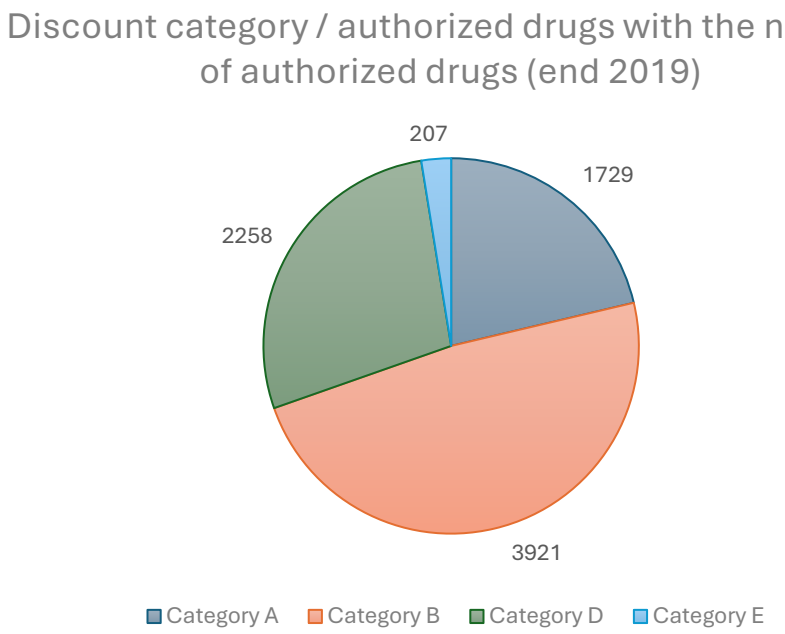
Amador-Fernández et al. (2024) provide the most detailed research on the clinical relevance of part of this reform. The study compared the 105 medications included in the pharmacist prescribing (PP) list with existing OTC alternatives. Their findings show a complex picture: of

the 105 PP medications, 20 active ingredients (19.0%) were identified as first-line treatments for 14 uses that had no OTC equivalents, providing real extra clinical value to pharmacist prescriptions. However, 10 medications (9.5%) showed no clinical relevance. These medications were either not the best options for treating the condition, or they were considered dangerous. Furthermore, 62 medications (59.0%) had positive clinical relevance, but 24 of these (22.9%) belonged to therapeutic classes that already contained at least one OTC medication. This raises questions about the added clinical benefit of the PP classification.

Amador-Fernández et al. (2024) also documented a gap in implementation. They defined this gap as the preference among pharmacists for OTC medications over PP medications when confronted with a clinical situation that could be managed using either type of medication. The study found that when an identical prescription medication was available, 75.6% of pharmacists chose the OTC option. The most common reasons for this were that it was fast and easy, and that there was no service fee for OTC prescriptions. This finding is in line with the counseling gap described by Maes et al. (2019), which suggests that pharmacists' legal responsibility to act as clinical gatekeepers can be challenging in practice. This is due to factors such as time constraints, reimbursement systems, and the practical difficulties of implementing them.

As mentioned earlier, the decision to remove Category C led to the reclassification of more than 650 products into the new categories. This "switch" process showed the authority’s scientific caution. A group of external experts, including representatives of doctors, pharmacists, and drugstore owners, was tasked with evaluating each molecule according to strict toxicological and clinical criteria (Spörri, 2017). The inclusion criteria for category D included an assessment of the therapeutic margin (the difference between the effective dose and the toxic dose), the tolerance and side-effect profile, as well as the molecule’s propensity to cause dangerous drug interactions (Swissmedic, 2017).

Figure 1 - Dispensing category / authorized drugs with the number of authorized drugs. Source: Swissmedic. (2020).



The result of this reform was massive: category D became much larger than it had been previously, accounting for 2,258 authorized drugs as of the end of 2019, compared with only 207 for category E and 1,729 for category A. Nevertheless, category B still accounts for the majority of authorizations, with 3,921. Although "switches" from category B (prescription-only) to category D (OTC) remain rare and are closely monitored by Swissmedic (with only three recorded instances in 2024 for example), the underlying trend is undeniably toward greater access.

This legal redefinition is, as already said, not merely an administrative change in terminology; it necessitates a paradigm shift in Swiss pharmacy practice. As Amador-Fernández et al. (2023) point out, the pharmacist is transitioning from a role as a dispenser to that of a central figure in self-care. The introduction of autonomous prescriptions for minor health concerns by pharmacists positions them on the front lines of clinical assessment (Amador-Fernández et al., 2024).

However, despite these implementation challenges, empirical evidence demonstrates that Swiss pharmacists are clinically effective when they do engage in structured triage. Erni et al. (2016) evaluated netCare, a collaborative primary healthcare service launched by the Swiss Association of Pharmacists (pharmaSuisse), in which community pharmacists perform structured triage using validated decision trees for 24 common condition that cause

discomfort/sickness, with the option of real-time physician backup via video consultation. For 21 months, pharmacists from 162 pharmacies did 4,118 triages. They only needed a doctor to help in 17% of the cases. In follow-up calls, 84% of patients who only saw a pharmacist said they were completely better or their symptoms were reduced.

Stämpfli et al. (2022) provide an updated analysis of the netCare service. This analysis covers the period immediately following the 2019 TPA reform. The period covered was from January 2019 to March 2020. Their study, which was based on 4,256 consultations across 209 pharmacies, confirms and adds to the findings of Erni et al. (2016). The study found that pharmacists managed minor health disorders on their own in 88.2% of cases, achieving a resolution of symptoms in 84.7% of patients three days after the consultation. Furthermore, 43.8% of clients indicated that they would have sought consultation with a doctor or an emergency department if the netCare service had not been available, suggesting that pharmacist-led triage directly reduces the burden on other primary care settings.

It must be emphasized that the clinical effectiveness documented by netCare data (84–88% autonomous resolution) is observed within a structured consultation protocol that remains optional and specifically trained, rather than routine practice. Therefore, the generalization of netCare performance to the pharmacist's role in routine OTC consultations must be executed with caution. While the pharmacist exhibits high clinical effectiveness during structured consultations, the prevailing mode of pharmacist-customer interaction in OTC purchases remains the less structured advisory encounter characterized by Maes et al. (2019).

The evidence gap in Swiss pharmacy advertising

A further dimension of the Swiss OTC landscape concerns the quality of health information that consumers encounter at the point of sale. Känzig et al. (2023), in an observational study conducted across 68 pharmacies in all three linguistic regions of Switzerland over a full year (July 2019 to May 2020), assessed whether the medications displayed in pharmacy windows were supported by evidence-based medicine. Their findings are surprising because more than half (56.9%) of the OTC medications displayed in Swiss pharmacy windows were not backed by scientific evidence. This proportion varied across linguistic regions (pharmacies in the German-speaking region had a lot more evidence-based medications ($p < .001$)) and across seasons, with a reversed pattern in spring, but it was the same between chain and independent pharmacies.

This finding has direct implications for the present research. If a substantial proportion of medications promoted in pharmacy windows are not supported by strong clinical evidence, marketing cues alone may not provide consumers with enough information to make an informed OTC choice. This reinforces the importance of critically evaluating both product claims and information sources in OTC decision-making.

Swiss pharmacists thus now act as the primary institutional safeguard against the clinical risks of self-medication identified by Indermitte et al. (2007), who documented that 15.9% of regular pharmacy patients were exposed to potential drug interactions between their prescribed treatments and OTC drugs purchased for self-medication.

The patient-consumer purchasing journey

In order to comprehend the dynamics of the OTC drug market, it is imperative to conduct an in-depth analysis of the modern consumer's decision-making process. This chapter highlights the changes that are happening. The first part of the section talks about how patients have gone from being passive to being responsible for their own health, but also feeling vulnerable when they're dealing with medical treatments. It then operationalizes this behavioral reality by applying contemporary marketing concepts (Kotler's 5A customer journey and the O-Zone influence matrix) to the specific, high-stakes context of the healthcare sector. The integration of these perspectives establishes the theoretical foundation necessary to delineate the patient-consumer's purchasing journey and, more specifically, to identify the precise friction points where the mediating variables of risk perception and source credibility activated.

From patient to consumer: Empowerment in health

The reflexive patient-consumer: a sociological foundation

The contemporary evolution of the individual’s relationship to healthcare is marked by a fundamental shift from the status of a "passive patient" to that of a "proactive consumer", a phenomenon defined in the social sciences as medical consumerism. Lupton (1997) draws on Giddens's (1992, 1994) notion of late modernity to identify a congruence between the "consumerist" patient and the "reflexive actor". Both are understood as actively calculating, assessing, and, if necessary, countering expert knowledge with the objective of maximizing the value of services such as healthcare.

Lupton’s empirical contribution is to demonstrate that this ideal of the purely rational, autonomous patient-consumer does not accurately describe real behavior. In her study, she draws on in-depth interviews with 60 lay people in Sydney and concludes that individuals do

not consistently occupy the "consumerist" position in their interactions with healthcare. Instead, individuals without a professional background in healthcare may adopt both the consumerist and passive patient subject positions concurrently or in a variety of ways, depending on the circumstances (Lupton, 1997).

This finding is of central importance because it identifies a fundamental tension that structures the entire OTC purchasing journey. The patient-consumer is not a stable archetype but a situational one: the position adopted depends on the perceived complexity of the decision, on the degree of perceived risk, and on the level of trust in the available information source.

The Health Belief Model as a complementary framework

This sociological insight can be enriched through the Health Belief Model (HBM), one of the most widely applied psychological frameworks for understanding health-related behavior. As Abraham and Sheeran (2015) explain, the HBM was originally developed in the 1950s by US public health researchers to enhance the effectiveness of health education programs. The model posits that health behavior is determined by four core beliefs: perceived susceptibility (the individual's assessment of their likelihood of experiencing a health problem), perceived severity (the individual's assessment of the seriousness of the consequences), perceived benefits (the individual's evaluation of the advantages of taking a preventive or therapeutic action), and perceived barriers (the individual's assessment of the costs, inconveniences, or risks associated with taking action).

Abraham and Sheeran (2015) observe that in empirical studies, perceived barriers have emerged as the strongest single predictor across studies and behaviors. This finding resonates directly with the risk-value trade-off framework (Aufegger et al., 2021) central to this thesis. In this framework, the "barriers" in the HBM map conceptually onto the perceived risk and monetary sacrifice constructs in Aufegger et al.'s mediation model.

Furthermore, Abraham and Sheeran (2015) observe that perceived susceptibility and severity represent perceived illness threat, and while these beliefs may be prerequisite to preventive motivation, they may be less strongly associated with behavior than beliefs about the specific behavior, such as benefits, barriers, and self-efficacy. In the OTC market, it would explain two steps in the purchase journey. First, consumers feel vulnerable to a health problem (susceptibility). They also judge how serious this problem is (severity). This creates the motivation to start looking for a product.

However, the final decision would depend on a second step. Consumers evaluate the barriers, such as risk, cost, and unreliable sources. They compare these barriers to the benefits, like symptom relief and convenience. This final balance turns a simple consideration into a real purchase intention.

Empowerment and digital information in the OTC market

This dynamic is very clear in the OTC market, where buying an OTC product is no longer just for convenience, it is now a real form of self-medication. As Alarsali and Aghaei (2022) show, the OTC drug market is constantly growing. More people decide to self-medicate and authorities also change more prescription drugs to OTC status. Finally, there is more health information available online than in the past, making life easier for patients and providing them with advice.

Bennadi (2014) specifies that self-medication has traditionally relied on a variety of information sources: families, friends, neighbors, the pharmacist, previous prescribed drugs, or suggestions from advertisements in popular media. However, the contemporary digital ecosystem has fundamentally disrupted this traditional hierarchy. Pharmaceutical companies have lost their historical status as exclusive providers of therapeutic information: digital marketing in the pharmaceutical industry is now eclipsing conventional marketing methods because of the simplicity of connection with end users and the low cost (Alarsali & Aghaei, 2022).

The COVID-19 pandemic has made this happen faster. Gong et al. (2025) point out that the internet has become an important source of information for people's health, with information that is easy for anyone to find, access, and use. People were looking for medical answers online because they couldn't go out and about much and weren't sure what was going on. This made the internet a really important source of health information.

This trend of empowerment through digital information is also characterized by Mohsen and Tarek (2020), who observe that the strong appeal of self-care is particularly pronounced among younger consumers, who demand fast, affordable, and immediately accessible treatment options without the barrier of a prior medical appointment.

The limits of rational autonomy: cognitive overload and the return to dependency

However, assuming absolute rationality on the part of the patient-consumer would be to ignore the cognitive limitations inherent in digital health. Survey data indicate that when searching for information on symptoms or treatments, 60% of OTC buyers feel they find "too much

information, " 52% encounter contradictory claims, and 40% report feeling uncertain after their searches (Kantar TNS, 2017).

This idea matches what Lupton's (1997) said about how dependency remains a central feature of the illness experience. Mitchell (1999) formalizes this dynamic from the perspective of consumer behavior. The average consumer has limited information, a reduced number of trials, and "semi-reliable" memory, making accurate risk assessment almost impossible.

Stone and Grønhaug (1993) have furthered the discussion on perceived risk for the marketing discipline, contending that risk perception deserves sustained scholarly attention due to its pervasive influence on consumer behavior. It has been argued that perceived risk is a more significant explanatory variable than perceived utility in many purchase contexts. This idea comes from the belief that people usually think losses are worse than gains when making decisions. This idea is similar to what Kahneman and Tversky (1979) found in their study of prospect theory. This loss-aversion mechanism is especially important in healthcare. Taking the wrong medicine could hurt the patient. This is different from simply losing money.

The modern patient-consumer is, therefore, a hybrid figure, eager for digital control at the onset of their purchasing journey but ultimately seeking expert reassurance to validate their choices. The present research aims to capture the aforementioned duality, not rational omniscience, in the OTC purchasing context.

The 5A model and the O-Zone approach (Kotler) applied to health

The Marketing 4.0 framework and its healthcare adaptation

In the digital economy, the Marketing 4.0 theory, conceptualized by Kotler et al. (2016), redefines the consumer's decision-making journey through five dynamic and interconnected phases: Aware (discovery), Appeal (attraction), Ask (search), Act (purchase), and Advocate (recommendation).

In healthcare, Hung et al. (2023) created a new method for social media marketing. They mixed Kotler's 5A model with the IDEA process. They tested this in a medical center and a postpartum nursing home in Taiwan. The study shows that this mix helps patients engage more. It also brings good results for the brand. A hospital is very different from buying an OTC product alone but this research proves that the 5A model works well in the health sector. However, applying this model to OTC medication purchases would require a fundamental contextual

adjustment because the patient has an active role in their own health outcome (Purcarea, 2019). This clinical dimension generates significant psychological friction in the MoFu.

The "Ask" to "Act" friction: evidence from the risk-value trade-off

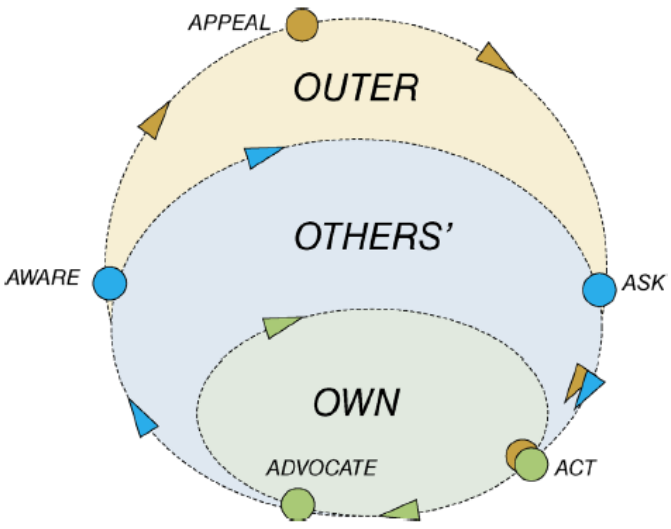
Aufegger et al. (2021) provide an empirical demonstration of this friction by using a modified version of Dodds et al. (1991) market cue evaluation model. Their analysis, conducted on an experimental sample of 253 participants from Germany (limiting generalizability but providing the most complete empirical operationalization of the risk-value trade-off in the OTC context available in the current literature), shows that the relationship between extrinsic cues (brand and price) and purchase intention is entirely mediated by perceived quality, perceived risk, and perceived value.

This complete mediation finding has critical implications for the 5A model as applied to OTC. The "Ask" phase is not just an information-gathering step, but rather a cognitive resolution process. In this phase, the consumer must construct a risk-value balance that is sufficiently favorable to proceed to the "Act" phase. The mediating variables that allow for such resolutions, namely risk perception and source credibility, are elaborated later on.

The O-Zone influence matrix applied to OTC

To navigate this uncertainty and proceed to the act of purchase ("Act"), the patient-consumer relies on three categories of influence, referred to by Kotler et al. (2016) as the "O-Zone": their own influence (Own), the influence of others (Others'), and external influence (Outer).

Figure 2 - Marketing 4.0 framework. Source: Kotler et al. (2016).



External influence (Outer) encompasses stimuli controlled by brands: promotional campaigns, digital presence, advertising. While online advertising can generate an initial desire to purchase an OTC product (Alarsali & Aghaei, 2022), its role in final health decisions remains structurally limited. Alarsali and Aghaei (2022) find that pharmaceutical digital marketing has a positive but only medium-level correlation with the buying decision ($r = 0.439$, $p < 0.001$), whereas the reference group effect (pharmacist, doctor, family, friend) shows a considerably stronger and more significant association ($r = 0.610$, $p < 0.001$). This quantitative hierarchy corroborates Purcarea's (2019) theoretical distinction, which asserts that commercial media primarily serve an informational function, while personal and expert sources play a legitimizing role, thereby potentiating the evaluation process.

Others' influence comes into play to unlock the "Ask" phase. To compensate for the lack of legitimacy in external influence, the patient must rely on an expert source (Purcarea, 2019). Alarsali and Aghaei (2022) emphasize that when seeking an OTC option, consumers may prefer to seek help from a healthcare professional specifically to reduce their perceived post-buying hazard. The pharmacist thus acts as the clinical safety filter for the OTC market, reassuring the patient regarding their risk-benefit trade-off (Aufegger et al., 2021). This expert-legitimizing function is supported by the research of Kautsar et al. (2012). They used something called "structural equation modeling" to show that how trustworthy a source of information is has a significant and positive effect on the decision to purchase non-prescription drugs. Their finding that doctors were the most frequently selected information source (26.55% of respondents) confirms that expert credibility, not social influence, may be the decisive factor in OTC medication purchase decisions.

Own influence is grounded in the consumer's personal judgment and prior experience. Alarsali and Aghaei (2022) find that brand experience shows the strongest correlation with buying decision of all three independent variables tested ($r = 0.740$, $p < 0.001$), exceeding both digital marketing and reference group effects. The true impact of a medication can only be fully understood through its physiological use, and past experiences of relief are therefore decisive. This clinical memory also explicates a feature of the "Advocate" phase, as identified by Kotler et al. (2016), that in the OTC market, brand advocates frequently recommend a product to others without purchasing it themselves at that moment, simply because they no longer have an immediate therapeutic need for it.

The moderating role of social influence on the relationship between health information seeking and purchase intention is further clarified by Gong et al. (2025), whose study is grounded in an integrated model combining the Extended Health Belief Model (EHBM), Cultivation Theory, and the Hierarchy of Effects (HOE) model. This study provides a causal mechanism for understanding the O-Zone dynamics in health-related purchasing. Analyzing data from 590 consumers who purchased health and functional food products during the pandemic, the researchers found that the effect of information seeking on purchase intention was significantly moderated by social influence (interaction term: $\beta = 0.176$, $p < 0.001$). This finding directly supports the O-Zone framework, suggesting that the influence of others (Others) does not merely add to own (Own) and external (Outer) factors, but actively interacts with the consumer's informational journey.

In summary and in simple terms, the implementation of the 5A model in the healthcare sector reveals a distinct hierarchical structure within the O-Zone: Own experience is the strongest driver of repeat purchase ($r = 0.740$), Others' expert influence provides the clinical legitimization necessary for first-time purchase ($r = 0.610$), and Outer digital stimuli create awareness and initial appeal but with limited impact on the final decision ($r = 0.439$).

Determinants of purchase intention (from "Ask" to "Act")

Prior to the examination of the specific determinants of purchase intention, it is necessary to clarify the terminology. The existing consumer behavior literature distinguishes between purchase intention, defined as a cognitive antecedent representing the consumer's self-reported likelihood of buying a product (Aufegger et al., 2021; Unver et al., 2023), and purchase decision, defined as the actual behavioral act of selecting and acquiring the product (Kautsar et al., 2012). In the present research, the dependent variable under study is purchase intention, consistent with the experimental design presented that will be presented later. However, studies that measure the closely related construct of "purchase decision" (e.g., Kautsar et al., 2012; Alarsali & Aghaei, 2022) are mobilized for their theoretical frameworks and empirical insights, with this terminological distinction acknowledged.

The work of Unver et al. (2023), grounded in the Theory of Planned Behavior (TPB), demonstrates that this transition requires the activation of key internal determinants. The TPB is a useful theoretical framework for understanding OTC purchase behavior, as supported by a lot of reliable research. McEachan et al. (2011) did a study that looked at 237 different tests from 206 articles. They found that the TPB explains 19.3% of the differences in health-related

behavior and 44.3% of the differences in behavioral intention. A crucial finding of their analysis is the observation that the predictive power of the TPB varies significantly as a function of behavior type. Specifically, physical activity and dietary behaviors were found to be better predicted (23.9% and 21.2% variance explained, respectively) than risk-related and detection behaviors (13.8–15.3%). This analysis supports the use of the TPB for modeling health-related purchase intentions. However, it also suggests that the TPB may require additional constructs, such as perceived risk and source credibility, to enhance its predictive power in domains related to risk, such as OTC medication purchase.

In the decision-making journey model developed by Kotler et al. (2016), the patient/consumer's progression is not merely a series of passive steps but a process of active cognitive engagement. Once attention is captured (Aware) and interest is awakened (Appeal), the consumer enters the inquiry phase (Ask). It is during this pivotal stage that information is sought and different treatment options are compared. However, the transition from this investigative phase (Ask) to the actualization of purchase intention (Act) represents the most critical friction point in the OTC market.

People don't usually buy OTC medications on a impulse. There are psychological reasons for this. Unver et al. (2023) show that this process requires the activation of important internal factors. A study of survey data from a group of Turkish consumers showed a strong connection between people's plans to purchase OTC products and their attitudes towards these products and their ability to make healthcare decisions. The findings indicate that subjective norms, understood as the perceived influence of one's social environment or social circle on healthcare decisions, were found to exert minimal influence as a predictor of purchase intention.

To forge this attitude and sense of control, the patient-consumer must resolve the clinical uncertainty they face. They depend on the evaluation of external signals that act as cognitive facilitators or barriers. This evaluation produces an overall perception of value, which constitutes the direct antecedent of purchase intention (Aufegger et al., 2021). The following sections dissect these determinants. The section ‘Marketing signals: Price and brand awareness’ analyzes the cognitive impact of marketing signals (price and brand awareness) and section ‘Sources of influence: Expert (pharmacist) vs. social (social-media content creator)’ evaluates the respective weight of expert influence (the pharmacist) and social influence (social-media content creator) in the final validation of the purchase decision.

Marketing signals: Price and brand awareness

The mediation framework developed in this section depends on a foundational construct: perceived value. Zeithaml (1988) wrote an important paper about the price-quality-value relationship. In it, she defined "perceived value" as "the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given.". This means-end model establishes value as the cognitive output of a trade-off between benefits (quality perception) and sacrifices (monetary cost, perceived risk). Zeithaml's (1988) framework is the theoretical foundation for the mediation chain that was made operational by Dodds et al. (1991). It was also expanded to the OTC context by Aufegger et al. (2021):

extrinsic cues (price, brand) → perceived quality and perceived risk → perceived value → purchase intention.

In the OTC market, the shift from just asking about a product ("Ask") to actually wanting to buy it ("Act") is mostly influenced by marketing signals, especially how well-known a brand is and the price. However, the way these signals are evaluated is not based on traditional economic thinking. It is based on a unique way of thinking about protecting health.

Brands as a mechanism for managing clinical uncertainty

In the pharmaceutical industry, the brand transcends its traditional differentiation function to become a mechanism for managing clinical uncertainty. According to signaling theory (Spence, 1973; Erdem & Swait, 1998), consumers facing a medical choice use brand recognition as a cognitive shortcut to assess the reliability and safety of a treatment option. Kohli and Buller (2013) confirm that this perceived safety value exerts a sufficiently powerful influence to drive consumers to pay a premium for branded products (24% of respondents).

Erdem and Swait's (2004) contribution to the field extends the existing signaling framework by demonstrating, through empirical evidence, the impact of brand credibility on consumer behavior. They define brand credibility as a composite of trustworthiness, defined as a brand's willingness to deliver on its promises, and expertise, defined as the brand's ability to deliver on its promises. This theoretical framework indicates that brand credibility affects not only product evaluation but also the entire consideration set of the consumer. Their study shows that higher brand credibility increases the probability that a brand enters the consumer's consideration set, decreases perceived risk, decreases information costs, and increases expected quality. These results suggest that the way brand credibility works (being trustworthy and showing expertise) is the same as two of the three dimensions of source credibility identified by Ohanian (1990).

This similarity creates a clear link between the brand effect and the source credibility. In the OTC market, buyers judge both the product and the person making the recommendation. They use the exact same criteria for both parts: trust and expertise. This could mean the two elements can add up. For example, a pharmacist can recommend a famous brand. In this case, the buyer trusts the medical expert and the known product at the same time. This creates a very strong combination. On the other hand, the situation is different for digital influencers. If an influencer recommends a generic product, the buyer may feel much less safe. The buyer might not fully trust the online person, and the unknown generic name could not reassure them either.

This dynamic is empirically supported by Aufegger et al. (2021), whose experimental design demonstrates that recognized brands enjoy a significant advantage in the OTC context. Their mediation Model A reveals that brand information significantly increases perceived quality ($b = -0.715$, $p < .001$, where negative coding indicates the branded condition) and simultaneously decreases perceived risk ($b = 0.492$, $p < .05$, where positive coding indicates the generic condition increasing risk). When these two mediators are controlled for, the direct effect of brand information on purchase intention becomes non-significant ($b = 0.004$, $p = .988$), confirming full mediation. The branded drug makes people think it is better and safer. So, to reduce the chance of treatment not working, patients usually keep doing what they're used to and take a known brand of OTC medication instead of a cheaper generic option.

This brand-loyalty mechanism is further supported by the strength of the brand experience variable in Alarsali and Aghaei's (2022) study, where it exhibits the highest correlation with purchase decision ($r = 0.740$, $p < 0.001$) among all variables tested. They note that patients are hesitant to switch medications after they have discovered a medication that is effective for them, since it is difficult to gather reliable information regarding the drug's value through means other than direct physiological experience.

In the TPB, Unver et al. (2023) found that attitude and perceived behavioral control significantly predicted purchase intention. These are two fundamental predictors of purchase intention.

This empirical pattern, in which experience, trust, and brand loyalty collectively influence OTC purchase behavior, has been directly confirmed by Lodorfos et al. (2006). These researchers applied the TPB specifically to the UK OTC pharmaceutical market. In a survey of 118 OTC consumers, they demonstrated that past experience with the brand was the most important factor influencing repeat purchase behavior, with 61% of respondents claiming loyalty to brands with

which they had a positive experience. Brand trustworthiness was the second most important factor in whether people would buy from a brand again, after price. Lodorfos et al. (2006) found that people's beliefs about how trustworthy a brand is were closely related to how sensitive they were to price. In their study, 55% of respondents said that price wasn't important when buying an OTC they trusted. This supports the idea that trust and price interact in both directions in the OTC context, rather than operating as separate factors.

The price paradox in healthcare

Price, the second major marketing signal, behaves in a particularly paradoxical manner in the pharmaceutical sector. Aufegger et al.'s (2021) modified market cue evaluation model assigns price a dual and contradictory role. On the one hand, price represents a monetary sacrifice: standard economic theory predicts that a rational consumer will seek the least costly treatment option. On the other hand, in high-stakes markets such as healthcare, price simultaneously functions as an indirect signal of clinical quality, suggesting a positive relationship between price level and product superiority.

However, the results of the Aufegger et al. (2021) study showed something unexpected. The study found that when the price was low, people thought the quality was better and felt less risk. Their mediation Model B shows that price information significantly predicted perceived value ($b = -1.976$, $p < .001$), and this relationship was mediated by both perceived quality and perceived risk. Participants were more likely to purchase a low-priced generic than a high-priced brand when price was disclosed. The authors suggest that cost savings associated with generic drugs can create a positive appeal among consumers with prior experience of generics, bridging the anticipated price-quality gap.

This nuance is important: the relationship between price and perceived quality in the OTC context is not always positive but moderated by prior experience and by information about bioequivalence. The full mediation mechanism through which price operates (the serial pathway from price through perceived quality, perceived risk, and perceived value to purchase intention) is developed in detail in section ‘Risk perception’.

The final act of purchase therefore rests on a complex cognitive framework. Purchase intention is activated when the mental evaluation of the product's quality and value is sufficient to offset the monetary sacrifice and reduce perceived risk to an acceptable level (Aufegger et al., 2021). In essence, price and brand are not just budgetary variables, they constitute the informational

signals through which the patient-consumer constructs a clinical justification for their purchase intention.

The Swiss generic paradox: a contextual specification

The surprising finding of Aufegger et al. (2021) that low prices can make people think the quality of something is better in the OTC context must be understood based on the specific national market where it was tested. Their sample was from Germany, and it came from a healthcare system that supports and expects the use of generic drugs. Germany has one of the highest rates of generic drug use in Western Europe. In a comparative analysis of 13 European countries, Wouters et al. (2017) documented that 80% of prescriptions in Germany are filled with generics, compared to only 17% in Switzerland, which had the lowest rate in the sample. This structural difference is reinforced at the price level: manufacturer prices in Switzerland are, on average, more than 2.5 times higher than in Germany and more than 6 times higher than in the United Kingdom (Wouters et al., 2017).

This idea is similar to a larger discussion about how well price can tell something about quality. Kirmani and Rao's (2000) review of the literature on signaling shows that the connection between price and quality is not a universal rule because it weakens when other reliable signals of quality are available to the consumer. Their framework shows how this relationship weakens or changes when there are reliable signals of bioequivalence (such as government approval, rules about replacing generic drugs, or past experience with the product). In markets where generic substitution is accepted, as shown by the study by Aufegger et al. (2021), the low-price signal can have a good impact. It shows that consumers are making smart choices, not that the quality is poor.

The Swiss context is different because it has a different structure. Historical data show that brand loyalty in the Swiss pharmaceutical market has been consistently strong. In 2008, generics accounted for only 9% of the national market, and in 2011, they accounted for 12% (Jessop, 2011). Despite the recent implementation of regulatory reforms that have promoted the adoption of generic substitution, with the proportion of substitutable cases reaching 69% in 2024 following the introduction of a 40% co-payment rule and an equal-margin system (HEALTH PANORAMA 2025, 2025; Haynes, 2025), Swiss consumers have historically interpreted price based on the classical signaling framework, associating high prices with high quality, rather than the bioequivalence perspective that has been internalized by the German sample studied by Aufegger et al. (2021).

This asymmetry between the European and Swiss markets creates a theoretically productive tension for the present research: the counterintuitive price-quality finding of Aufegger et al. (2021) may not fully replicate in Switzerland, where the weaker institutional normalization of generics preserves the classical signaling mechanism. The present research therefore operates as a contextual test of whether Aufegger et al. (2021)'s finding generalizes to a national market with historically different generic-drug adoption dynamics. Consequently, this strategic positioning effectively transforms what might initially appear to be a mere replication into a theoretically specified test of the boundary conditions of price-quality signaling in the pharmaceutical domain.

Sources of influence: Expert (pharmacist) vs. social (social-media content creator)

In today's digital ecosystem, the transition from evaluation (Ask) to purchase (Act) involves a direct interaction between two types of extrinsic influence (Kotler et al., 2016): social influence, driven by electronic word-of-mouth (eWOM) and content creators, and expert influence, embodied by the pharmacist. While the former excels at capturing attention and generating desire, the clinical uncertainty inherent in health products substantially modifies the rules of persuasion at the moment of final decision.

Social influence in non-healthcare contexts: the S-O-R mechanism

Generation Z, frequently described as "digital natives," displays high levels of engagement with social media platforms for information and inspiration (Djafarova & Bowes, 2021). Applying the Stimulus-Organism-Response (S-O-R) model of Mehrabian and Russell (1974) to Instagram, Djafarova and Bowes (2021) show that brand posts, influencer recommendations, and user-generated content can act as stimuli that produce positive affect and, in turn, impulsive purchases. Their effect was observed only among female participants, which indicates that receptivity to digital stimuli depends on the consumer and on the product context rather than operating universally.

In a similar way, Alyahya et al. (2020) look at a similar situation in the specific area of digital marketing for pharmaceutical companies. They did a study in Saudi Arabia to see how digital platforms affect people's medicine buying habits. These platforms included social media apps like Facebook, Instagram, and Twitter, as well as web services. Their study shows that the choice of digital platform can significantly predict how much people will purchase, but the effects vary based on the type of medication (OTC vs. prescription). In addition, they suggest

that the more people use online pharmacy platforms, the more they trust these platforms and think they are legitimate.

In the OTC pharmaceutical market, Alarsali and Aghaei (2022) confirm that online promotion is capable of generating an initial desire to purchase a product, with digital marketing showing a positive medium-level correlation with the buying decision ($r = 0.439$, $p < 0.001$). This suggests that social influence retains the capacity to influence the early phases of the purchasing journey ("Aware"/"Appeal").

The clinical risk barrier and the pharmacist as safety filter

However, when this social influence mechanism is applied to the purchase of OTC medications, there's a major hurdle as seen before: clinical risk. Self-medication is not a small act of consumption. Studies show that when people take medicine without the right professional help, there's a higher chance of bad reactions (Indermitte et al., 2007; Hughes et al., 2001).

The Elaboration Likelihood Model (ELM) of persuasion (Petty & Cacioppo, 1986) may provide the theoretical framework for understanding why a pharmacist's influence on high-involvement health decisions is different from that of digital influencers. According to the ELM, when elaboration likelihood is high (as it is in the OTC purchase context where the consumer faces potential physical risk), persuasion occurs primarily through the central route, and it is very important to carefully check the accuracy of the information. On the other hand, when it's not so clear, persuasion relies on peripheral cues like how attractive the source is, how entertaining the content is, or social proof. In the OTC context, the pharmacist's recommendation is based on expertise, clinical knowledge, and risk assessment. On the other hand, the digital influencer's endorsement is based on factors like attractiveness, parasocial identification, and entertainment value. This theoretical difference explains why, as Unver et al. (2023) find, social media's peripheral influence is not enough to override the central processing that high-involvement health decisions require.

Faced with this clinical vulnerability, Alarsali and Aghaei (2022) find that consumers may prefer to consult a healthcare professional specifically to reduce their perceived post-buying hazard. Gore et al. (1994), in their study of consumer involvement in nonprescription medicine purchase decisions, provide direct empirical evidence of the pharmacist’s influence. In the latter, respondents who consulted pharmacists and physicians more frequently for nonprescription medicine information showed a higher degree of involvement than consumers who consulted them less frequently. According to the findings of the study, expert sources such

as pharmacists and physicians are consulted only when information is actively sought as a result of high involvement behavior. In contrast, lay sources (family, friends) are consulted regardless of the involvement level due to their immediate accessibility.

This expert-legitimizing function receives quantitative support from two independent empirical studies. First, Alarsali and Aghaei (2022) report that the reference group effect (including pharmacists and doctors) has a stronger correlation with purchase decision ($r = 0.610$, $p < 0.001$) than pharmaceutical digital marketing ($r = 0.439$, $p < 0.001$). Second, Kautsar et al. (2012) demonstrate that the credibility of the source of information significantly influences the purchase decision for OTC drugs (t-value = 2.12, $p < .05$), with credible sources operating through a process of cognitive internalization whereby consumers adopt the opinion of a credible source because they believe the information provided is accurate.

Although Kautsar et al.'s (2012) dependent variable is purchase decision rather than purchase intention, the underlying cognitive mechanism of source is theoretically transferable to the intention stage that precedes behavioral decision, as formalized by the attitude-intention-behavior chain of the Theory of Planned Behavior (TPB) (Ajzen, 1991).

Villako et al. (2012) also provide more support. They examine the factors that influence the purchase and counseling about OTC medicines in community pharmacies in Estonia. In their survey of 1,820 pharmacy customers, they found that the pharmacist's recommendation was a key purchase factor for 57% of OTC buyers.

The hierarchy of influence sources in the OTC context receives its most comprehensive empirical validation for Switzerland in the recent work of Diaz Hernandez et al. (2024). In a nationwide cross-sectional online survey of 2,020 adults representative of the Swiss population by age, sex, and linguistic region, they established a clear hierarchy of both usage and trust across health information sources. The most frequently used sources were general practitioners (ranging from 46% to 73% depending on age group), government websites (40% to 55%), family and friends (37% to 63%), and pharmacies (33% to 46%). However, the trust hierarchy diverges significantly from the usage hierarchy: the most trusted sources were specialized physicians (94% to 98%), general practitioners (90% to 96%), and pharmacies (81% to 89%). This divergence between usage frequency and trust level is of central importance for the present study. Indeed, pharmacies are ranked fourth in terms of usage and third in terms of trust, suggesting an underutilization of a highly credible source. This is exactly what the current thesis tries to understand about the OTC purchase journey.

Furthermore, Diaz Hernandez et al. (2024) report that the most frequently searched health topics, classified according to the International Classification of Primary Care (ICPC-2), were general and unspecified symptoms (20.9%) and musculoskeletal issues (19.4%), the latter category encompassing the pain conditions that constitute one of the two therapeutic categories examined in this thesis. Their analysis revealed that age was associated with decreased odds of using social media for health information, confirming that younger generations are significantly more likely to rely on social media as a health information source, even as they assign it lower trust than expert sources.

The non-significance of social pressure in OTC: a key contrast

The contrast with lifestyle categories is instructive. Unver et al. (2023) found that subjective norms did not predict OTC purchase intention, which they attribute to the absence of social consequences attached to medication choices and to the private nature of self-medication. Where social media stimuli can trigger impulsive fashion purchases through emotional arousal (Djafarova & Bowes, 2021), the potential physical consequences of a wrong medication choice appear to block that pathway. Expert credibility therefore plays a legitimizing role at the moment of purchase, while social influence remains largely confined to the earlier stages of the journey.

This phenomenon is further clarified by Jia and Li (2024), who suggest that, for Generation Z specifically, the credibility of health information sources does not merely mitigate influence but rather, it activates avoidance of the information entirely (a mechanism fully developed in section ‘Generational differences: Millennials vs. Generation Z’). This suggests that the credibility of the source is not merely a factor that modulates the influence, but rather a threshold condition that determines whether influence is received at all.

Mediating psychological variables

The preceding sections have established that the patient-consumer's progression from consideration to purchase intention in the OTC market is shaped by two categories of external stimuli: marketing signals and sources of influence. Nevertheless, identifying these stimuli does not, in itself, explain the psychological mechanism through which they translate into a purchase decision. As Aufegger et al. (2021) demonstrate in their research, the relationship between extrinsic cues such as brand or price and purchase intention is not direct. In fact, it is fully mediated by psychological factors, specifically perceived quality, perceived risk, and perceived value.

This chapter examines the two mediating variables that constitute the core psychological transmission mechanism of the present research model. Section ‘Risk perception’ analyzes risk perception, founded upon the theoretical framework of the risk-value trade-off theory, which explains how the patient-consumer cognitively evaluates the potential negative consequences of a therapeutic choice. Section ‘Trust and credibility of the source’ addresses trust and credibility of the source, which explains how the perceived reliability of the information provider modulates the weight assigned to these risk evaluations and ultimately facilitates or inhibits the transition to purchase intention.

The combination of the two mediators provides two parallel psychological processes through which various types of external stimuli are converted into purchase intention. One example is the risk-value pathway, which is responsible for cognitive evaluation of marketing cues such as brand and price into purchasing intention through three sequential mediators (perceived quality, perceived risk, and perceived value). On the other hand, the source credibility pathway functions to transform the characteristics of the sources conveying information (e.g., pharmacist vs. social-media content creator) into purchase intention by way of the two variable mediators, perceived expertise and perceived trustworthiness. Each of these pathways operates independently within the conceptual framework established for this study and is based on an entirely different theoretical model: the Dodds-Zeithaml-Aufegger lineage for the risk-value pathway and the Hovland-McGuire-Ohanian lineage for the source credibility pathway. In keeping with the ELM (Petty & Cacioppo, 1986), both of these pathways represent central route and peripheral route persuasion mechanisms that function separately rather than consecutively.

This mediation logic is consistent with both the TPB (Ajzen, 1991), in which attitude and perceived behavioral control mediate the intention-behavior link, and with Kotler et al.'s (2016) O-Zone framework, in which the resolution of the "Ask" phase depends on the cognitive processing of signals received from Own, Others', and Outer influences.

Risk perception

Theoretical foundations of perceived risk

The concept of perceived risk in consumer behavior was introduced by Bauer (1960), who proposed that consumer actions inherently involve consequences that cannot be anticipated with certainty, and that some of these consequences are likely to be unpleasant. As Mitchell (1999) explains in his comprehensive review of thirty years of research on this construct, Bauer's

contribution was to emphasize that it is subjective (perceived) risk, not objective risk, that motivates consumer behavior.

Mitchell (1999) further elucidates that this subjective nature of perceived risk emanates from the consumer's inherent cognitive limitations. The consumer's limited information, a reduced number of trials, and not always reliable memory render accurate assessment of risk virtually almost impossible for the average consumer.

Building on Bauer (1960)’s initial formulation, the perceived risk literature has converged on a two-component conceptualization. According to Cunningham (1967, as cited in Mitchell, 1999), perceived risk has two parts. The first part is the amount that would be lost if the results of an action were not good. The second part is the person's own feeling that the results will be bad. This two-part structure (the chance of loss and the seriousness of the consequences) is still the main way it's measured in the research, and it's been used the same way in different types of products, from food to long-lasting goods (Mitchell, 1999). In practice, the research on risk has identified several different ways that these two components are seen. Mitchell (1999) reports that the most commonly studied aspects include financial risk (the potential loss of money), performance risk (the risk that the product will not perform as expected), physical risk (the risk of bodily harm), psychological risk (the risk to one's self-image), social risk (the risk of negative evaluation by others), and time risk (the risk of wasted time). How important these factors are depends on the type of product, how involved the customer is, and the situation.

In their subsequent reflections on the notion of risk in the context of the marketing discipline, Stone and Grønhaug (1993) contend that the study of risk perception deserves sustained research attention, underscoring its crucial role in understanding consumer behavior. They say that perceived risk is a more important factor than perceived utility in many purchase situations because losses are seen as larger than gains when consumers make decisions. This idea was studied by Kahneman and Tversky in 1979. They came up with a theory called prospect theory. This theory has two important properties. First, it is "concave" for gains. This means that each additional gain feels less positive than the previous one. Second, it is "convex" for losses. This means that each additional loss feels less negative than the previous one. Most importantly, the value function is generally steeper for losses than for gains, indicating that losses are experienced more intensely than equivalent gains. This is called loss aversion. It means that losing something generally feels worse than gaining something of the same value. In the OTC pharmaceutical context, this loss-aversion mechanism suggests that the potential "loss" from a

wrong medication choice (adverse effects, drug interactions, therapeutic failure) carries disproportionate psychological weight compared to the "gain" of symptom relief. This has the effect of structurally biasing the patient-consumer toward risk-reducing strategies, such as reliance on branded products and consultation of expert sources.

Risk perception in the OTC pharmaceutical context

For OTC medications, the risk factors are very clinical. The purchase of OTC drugs is different from buying other things. Financial or social risks are usually the main risks when buying things, but the risks of buying OTC drugs are different because they are also physical. People need to think about more than just how much the medicine costs. They also need to think about how well it works, how it might interact with other drugs, and whether it will not work the way it should.

Limbu and Huhmann (2024), in their scoping review of factors influencing online medication purchase intentions, identify perceived risk as one of twelve major drivers of consumer behavior. It is noteworthy that they delineate three dimensions of perceived risk that are especially pertinent in the pharmaceutical context: financial risk, physical risk, and source risk (i.e., concern about the credibility and reliability of the information source). Their review finds that these three risk dimensions adversely affect consumers' purchase intentions.

This finding has a critical implication for the present study: in the OTC market, the source of information itself constitutes a dimension of perceived risk. The credibility of the pharmacist versus the perceived unreliability of an online influencer for example is not merely a matter of trust but is also directly embedded in the consumer's risk assessment. While some literature has explored the interaction between source credibility and perceived risk (Grewal et al., 1994), the present research adopts a more parsimonious theoretical structure in which these two cognitive mechanisms operate through distinct persuasion pathways. These two pathways are tested separately as H4 and H5.

Hughes et al. (2001) provide a detailed overview of several risk factors associated with self-medication, including negative drug interactions, misdiagnosis, and the possibility of masking severe conditions. The authors also mention that older adults may have an added risk because of the number of medications and health problems they have. This is something that Stone et al. (2020) also worry about. In their pilot study with 20 community-dwelling older adults in the US (Stone et al., 2020) found that OTC medication selection is strongly driven by individual factors (like personal beliefs about OTC safety, the perceived urgency of the ailment, and

existing medical constraints) often leading them to select medications without professional consultation.

The risk-value trade-off as a mediation mechanism

The empirical integration of risk perception into the OTC purchase intention framework is most rigorously achieved by Aufegger et al. (2021). They propose and test a modified version of Dodds et al.'s (1991) market cue evaluation model. In this model, the relationship between outside factors (like price and brand) and the desire to purchase something is not direct. Instead, it passes through a serial mediation chain that involves perceived quality, perceived risk, and perceived value.

The two mediation models estimated by Aufegger et al. (2021) show full mediation for the brand signal and an unexpected direction for the price signal: low prices increased perceived quality and reduced perceived risk. The corresponding coefficients are reported in section 'Marketing signals: Price and brand awareness'. The authors attribute the reversed price effect to participants' prior experience with generic medicines.

This empirical evidence establishes the risk-value trade-off as the central cognitive mechanism underlying OTC purchase decisions: the consumer's purchase intention is activated when the mental evaluation of a product's quality and value is sufficient to offset the monetary sacrifice and reduce perceived risk to an acceptable level (Aufegger et al., 2021).

Risk perception, involvement, and the link to trust

To understand the role of risk perception, it's important to consider its connection to two related concepts: involvement and trust. Mitchell (1999) says that the idea of risk is often thought of as a cause of involvement, especially when the cost is high and the customer might lose money, but the relationship goes both ways. According to Laurent and Kapferer's (1985) model of involvement, there are four parts. Two of these parts are related to risk and include both how important risk is and the probability of making a purchase error. This suggests that risk is not just something that happens before involvement, but it is also an important part of the idea of involvement itself.

This theoretical connection between risk and involvement is directly relevant to this study, which compares two product categories (pain and cold/flu) believed to cause different levels of consumer involvement. Dholakia (2001) created a model that explains how people's level of involvement with a product affects how they see risk. The more involved people are with a

product, the more information they process, which makes them more aware of risk. In the OTC context, a product that is seen as more personally relevant (for example, a pain reliever for a chronic condition versus a cold medication for a mild seasonal ailment) should therefore be seen as more dangerous, make people more likely to look for information, and make them more likely to pay attention to how reliable the source is.

Mitchell (1999) observes that decision uncertainty is the upstream condition activating both trust and perceived risk. In the present model, the two mediating mechanisms therefore share a common origin but are not causally linked to each other: the risk–value chain transmits the effect of marketing signals, while source credibility transmits the effect of the recommending source.

Trust and credibility of the source

The source credibility construct: theoretical origins and dimensions

The construct originates in the experimental work of Hovland and Weiss (1951), who showed that highly credible sources produce significantly greater immediate opinion change than sources of low credibility.

Two principal dimensions of the credibility construct (expertise and trustworthiness) were subsequently developed into a bipartite model by Hovland, Janis, and Kelley (as cited in Ohanian, 1990). They defined expertise as a communicator's adequacy in being perceived as a valid source of assertions, and they defined trustworthiness as the communicator's ability to be viewed as having the intention to communicate the most valid assertions to the audience.

Building on this model, Ohanian (1990) proposed and tested a three-component scale of source credibility that added attractiveness as a third dimension. This dimension was based on McGuire's (1985) work on attitude change. McGuire identified physical attractiveness, likability, and similarity as source characteristics that can influence persuasion through identification. In this process, people are more likely to adopt the attitudes of a source they identify with. This pathway differs from the internalization process linked to expertise and trustworthiness. Source credibility can therefore influence persuasion through different mechanisms. This distinction is particularly relevant in the OTC context. The tri-component scale developed by Ohanian (1990) combines both processes into one measure therefore allowing this study to assess how much each pathway contributes toward OTC purchase intention. Ohanian's (1990) semantic differential scale contains 15 items and was developed using two exploratory and two confirmatory studies. The scale exhibited good reliability

(Cronbach's alpha ≥ 0.80 across subscales) and demonstrated strong construct validity through LISREL confirmatory factor analysis.

Trustworthiness refers to the perceived honesty and reliability of the communicator, and expertise to the perceived knowledge and competence behind the message (Ohanian, 1990). Both have been shown to increase attitude change, and in selling contexts an expert salesperson converts significantly more customers than a non-expert one (Ohanian, 1990). The items used to measure the two dimensions in the present study are reported in Appendix 11.

Crucially for the present research, Ohanian (1990) found that all three intention-to-purchase measures (inquiring about the brand, considering purchase, and actually purchasing) were significantly and positively correlated with each of the three source-credibility dimensions (expertise, trustworthiness, and attractiveness). This establishes a direct empirical link between the perceived credibility of a source and the consumer's purchase intention, a link that the present study seeks to test in the specific context of Swiss OTC medication purchases.

Source credibility applied to the OTC medication purchase

The application of source credibility theory to the non-prescription drug market has been empirically investigated by Kautsar et al. (2012), who tested the relationship between consumer involvement, credibility of the source of information, and purchase decisions for OTC drugs in Indonesia. Using structural equation modeling (PLS), their study demonstrated that the credibility of the source of information has a positive and significant influence on purchase decisions (t-value = 2.12, $p < .05$).

Their study defined credibility as the extent to which consumers perceive the source as possessing relevant knowledge and skills, and as being trusted to provide unbiased and objective information. The results revealed that among all information source categories, doctors were the most frequently selected source (26.55% of respondents), confirming that expert sources with high perceived credibility in the health sector have the strongest influence on the decision to purchase medication.

Kautsar et al. (2012) further demonstrated that credible information sources influence the purchase decision through a process of internalization, whereby consumers adopt the opinion of a credible source because they believe the information provided is accurate. This mechanism is particularly important for this research because it provides a way for pharmacists' recommendations to translate into purchase behaviour by cognitive internalization rather than

social pressure, which has been shown to be not significant (Unver et al., 2023) within the context of OTC products, but rather, through the internalization of a recommendation receiving from an expert (i.e., a pharmacist) based upon the credibility of the source.

Source credibility in the digital era: the pharmacist versus social-media content creator asymmetry

The tri-component model of source credibility (Ohanian, 1990) provides a powerful lens through which to analyze the differences between the pharmacist and digital influencers in the OTC purchase journey. When applying Ohanian's three dimensions, the pharmacist should score high on expertise because of formal training, clinical knowledge, and the authority to dispense Category B medicines. The pharmacist should also score high on trustworthiness due to perceived objectivity, limited commercial bias, and institutional support. However, attractiveness is lower in the digital sense, given the limited reach and less entertaining format. In contrast, digital influencer sources tend to score high on attractiveness through visual content, entertainment, and parasocial identification (Djafarova & Bowes, 2021), but lower on perceived expertise and trustworthiness in healthcare.

This finding aligns with Purcarea's (2019) theoretical hierarchy, which distinguishes between the informational function of commercial and digital media (e.g., capturing attention and generating awareness) and the legitimizing function of personal and expert sources (e.g., validating purchase decisions).

Jia and Li's (2024) study is important for its empirical evidence, which shows that Generation Z is very sensitive to how trustworthy health information sources are. The researchers found that when people from Generation Z see information sources as unreliable, they actively avoid seeking out the information. They don't just ignore it. A study of focus groups shows that young consumers think health information shared by commercial accounts is driven by commercial interests and therefore not trustworthy. For Generation Z, this suggests that a pharmacist's credibility, based on expertise, may positively influence the intention to purchase a product, and may also counteract the information overload and credibility deficit that characterize the digital health information landscape.

Diaz Hernandez et al. (2024) directly confirm the relevance of this pharmacist-social-media content creator mismatch in the Swiss context, whose data reveal that pharmacies are trusted by 81% to 89% of the Swiss population across all age groups, while social media is used for health information with decreasing odds as age increases. This means that for the youngest age

groups, social media usage is highest but its trust level is lowest relative to expert sources, creating exactly the credibility gap that Jia and Li (2024) identify as a trigger for information avoidance. The convergence of these Swiss empirical data (Diaz Hernandez et al., 2024) with the theoretical credibility framework (Ohanian, 1990) and the behavioral evidence on information avoidance (Jia & Li, 2024) provides a robust triangulated foundation for the present study's hypothesis that source credibility mediates the relationship between information exposure and purchase intention.

Evidence on younger consumers suggests that trust in health-related settings is shaped more by expected benefits and by confidence in the organization behind the source than by perceived risk (Rahman et al., 2021). That study measured trust in a healthcare technology rather than in a person, so it cannot be treated as direct evidence about trust in pharmacists or content creators. It nevertheless supports the more general position found in the relationship marketing literature, where trust is defined as confidence in the reliability and integrity of an exchange partner (Morgan & Hunt, 1994). Sources perceived as expert and trustworthy should therefore be more persuasive, and this effect is expected to operate through source credibility rather than through the perceived risk of the product itself (H5).

The literature reviewed in this section supports the proposed mediation logic. First, source credibility includes expertise, trustworthiness, and attractiveness (Ohanian, 1990), although the importance of these dimensions is not always the same, with expertise showing the most consistent effect on purchase-related outcomes (Ohanian, 1991). Second, source credibility has been shown to influence purchase decisions in the context of OTC medications (Kautsar et al., 2012). Third, this influence seems to come from cognitive internalization rather than social pressure (Kautsar et al., 2012; Unver et al., 2023). Fourth, among younger consumers, trust in a health-related source may depend more on perceived benefits and confidence in the source than on perceived risk (Rahman et al., 2021). Finally, for Generation Z, low source credibility may lead not only to lower influence but also to active avoidance of the information (Jia & Li, 2024).

Contextual and individual moderating variables

The previous chapter has established that perceived risk and source credibility function as the core mediating variables through which external stimuli translate into purchase intention in the Swiss OTC market. Still, these mediation pathways don't work the same way in all purchase situations or for all types of consumers. The strength and direction of the relationships between

marketing signals, sources of influence, and purchase intention are likely to be conditioned by two categories of moderating factors which are contextual variables related to the product itself and individual variables related to the consumer.

This chapter examines two such moderating variables that are central to the present research design. Section ‘Consumer involvement and product category (Pain vs. Cold/flu)’ looks at how consumers are involved and the type of product (pain relievers versus cold and flu medications) as a way to understand the situation. This is based on the motivational process model of Dholakia (2001) and the ELM (Petty & Cacioppo, 1986, as applied to OTC by Sansgiry et al., 2001). This helps to understand why people think that the risk is more or less intense and why they trust the source of the information more or less when it comes to these two types of medicines. Section ‘Generational differences: Millennials vs. Generation Z ‘ looks at how Millennials and Generation Z are different in terms of age, using digital health literacy (Sørensen et al., 2012) and health information avoidance (Jia & Li, 2024) to explain why these two groups may react differently to the same marketing and information.

Together, these moderators allow the present research to move beyond a one-size-fits-all model of OTC purchase behavior and capture the nuances that arise from the interaction between the therapeutic need and the identity of the consumer. Their inclusion in the research model is consistent with the 5A framework's recognition that the customer path is not linear but shaped by contextual and individual contingencies (Kotler et al., 2016).

Consumer involvement and product category (Pain vs. Cold/flu)

The construct of product involvement: enduring and situational dimensions

Product involvement is a term used in consumer psychology that describes how excited a person is about a product. It is a central motivational construct, meaning it is a key part of why people buy things. It is important because it affects how people think and behave when they are making a purchase decision (Dholakia, 2001). In their 1985 paper, Laurent and Kapferer argued that involvement can't be measured by just one dimension. They studied 14 different types of products and found many factors that influence whether a person will buy a product. These factors include how important the person thinks the product is, how risky they think buying it is, how likely they are to make a mistake when buying it, how much fun they think it will be, and how much it means to them.

Laurent and Kapferer (1985) further demonstrate that depending on the specific reasons for being involved, the consequences for consumer behavior differ. Two consumers may show the

same level of involvement, but for different reasons, which can lead to different results. This insight is directly relevant to the present study's comparison of pain relievers and cold medications. Even if both types of products cause similar levels of overall involvement, the way that involvement is caused (by risk or by need) may have different effects on how information is processed and how much people trust the source.

A critical distinction in the involvement literature separates enduring involvement from situational involvement. This distinction was originally formalized by Bloch and Richins (1983), who proposed a theoretical model for the study of product importance perceptions.

Enduring involvement is a concern for a product class that is independent of specific purchase situations. It comes from the product's association with the individual's self-concept, values, and ego (Dholakia, 2001). Situational involvement, on the other hand, is when a consumer becomes more interested in a product for a short time because they want to achieve certain goals related to the product (Dholakia, 2001).

This difference is important for comparing pain and cold/flu medications. For OTC drugs, most consumers probably won't be involved for a long time. Unlike cars or clothes, medications aren't usually linked to how people see themselves or their sense of self. However, situational involvement, as mentioned earlier, is exactly how the OTC purchase context generates its distinctive motivational dynamics. A headache, a cough that won't go away, or the start of the flu can all make people want to use more of a certain product.

The motivational process model: how involvement drives risk perception

Dholakia (2001) proposes and empirically validates a motivational process model that formalizes the causal pathway from involvement to risk perception to behavioral responses. His model, tested through LISREL structural equation modeling on 155 respondents across multiple product categories, shows a clear sequential process. First, enduring involvement positively and significantly influences situational involvement ($\gamma_{21} = 0.65$, $t = 10.12$). Second, situational involvement significantly increases psychological risk perception ($\beta_{12} = 0.47$, $t = 7.45$), suggesting that involvement triggered by an upcoming purchase can also increase feelings of anxiety. Third, and finally, both situational involvement and psychological risk positively and significantly influence cognitively-evaluated social risk ($\beta_{32} = 1.16$, $t = 9.10$; $\beta_{31} = 0.26$, $t = 5.15$) and functional risk ($\beta_{42} = 0.37$, $t = 5.74$; $\beta_{41} = 0.49$, $t = 6.89$).

This finding reveals that risk is first experienced affectively as anxiety and subsequently evaluated cognitively, resulting in specific risk dimensions. This is a sequence consistent with Zajonc's (1980) view that affect precedes detailed cognitive inference (Dholakia, 2001).

A crucial implication of this model is that situational involvement may be a necessary condition for the experience and evaluation of risk. As Dholakia (2001) states, for low-involvement purchases, a consumer may not evaluate, and therefore not experience, risk associated with the product class. So, it would directly affect the current study's hypothesis because if the two OTC product categories (pain vs. cold/flu) cause different levels of concern, they should also lead to different levels of risk perception and, as a result, different responses to the research model's mediating variables.

Involvement and information processing in the OTC context

Researchers like Sansgiry et al. (2001) have studied how people's level of engagement affects their understanding of OTC medication labels. Their study was based on the ELM (Petty & Cacioppo, 1986), and they changed how involved people were in the study by using situations that were high or low involvement. They measured how well people understood the labels, how they felt about the product labels, what they thought about the product, and if they wanted to buy it.

Their results show a more complex situation. People were more likely to understand the labels and write positive reviews when they were involved. This suggests that when consumers are involved, they process information about OTC medications in a way (central route) that focuses on the true worth of the information.

But being involved didn't necessarily make people more likely to buy. Sansgiry et al. (2001) explain this surprising result using Social Judgment Theory. According to this theory, people who are very involved may think more carefully about something, which could lead to more critical thinking and potentially negative feelings about a purchase.

This finding has two important implications for the present study. First, it confirms that involvement in the OTC context operates primarily through the cognitive processing pathway (from understanding to evaluation) rather than directly on purchase intention. This reinforces the mediating role of perceived risk and perceived value established before. Second, it suggests that the relationship between involvement and other factors is not always positive. Consumers who are more involved may be able to evaluate products better, but they may also become more

skeptical. This makes it even more important for consumers to trust the information they're given when making purchasing decisions.

Besides this mental process, past research studied another point in the OTC market. It looked at how personal involvement changes the way people search for information.

Gore et al. (1994) provide the most directly relevant empirical evidence for the present study's product category comparison. In their survey of people who use nonprescription medicines, they found that people who use more of these medicines are more aware of the importance of using them safely and effectively. This increased awareness leads to people using more expert sources to learn more about the medicines. They also say that people's level of involvement in deciding to buy nonprescription medicine is a big factor in how much information they look for before buying. They suggest that marketers of nonprescription drugs should check how involved their customers are and create messages that are specific and persuasive for the people who are most likely to buy.

More recent evidence provides a broader comparison of products in different categories. Taylor et al. (2023) surveyed 575 people in a Canadian province. They asked how likely people were to look for information before buying OTC medicines. These medicines included things like painkillers, cold and flu medicines, allergy medicines, digestive medicines, and skin-care products. The survey also asked about 10 other products that are not medicines. Their results show that people were more likely to search for information about OTC medicines ($M = 5.0$) than non-medicine products ($M = 4.1$). This confirms that OTC medicines are more involved than typical consumer goods. But they also find that people are not very likely to search for information before buying OTC medicines. Furthermore, familiarity with OTC medications was only weakly (though positively) related to information search, suggesting that even familiar buyers engage in limited additional search.

Application to the Pain vs. Cold/Flu comparison

Pain relievers (analgesics) are among the most frequently purchased OTC medications and are commonly associated with conditions that vary widely in severity like mild occasional headaches to chronic pain management. The importance of this product category in Switzerland is also supported by longitudinal data. Analgesic use has more than doubled over the past three decades, increasing from 12% of the population in 1992 to 26% in 2022 (FSO, 2024). This makes analgesics the OTC category with the strongest growth over this period. This pattern also allows for both enduring and situational involvement. Consumers who regularly

experience pain may develop a stable and lasting interest in the product category (enduring involvement), while an acute episode of pain can trigger immediate situational involvement. Moreover, the physical risk dimension (the possibility of bodily harm from incorrect dosage, drug interactions, or adverse effects) is particularly salient for analgesics.

Cold and flu medications, by contrast, are typically associated with self-limiting conditions of relatively short duration. Situational involvement is triggered by the onset of symptoms but may be less intense than in the case of pain, given the generally mild nature of common colds. The risk involved may also be different. Performance risk (whether the medication will effectively relieve the symptoms) remains relevant, while physical risk may be perceived as lower for standard cold and flu medications than for analgesics.

According to Dholakia's (2001) motivational process model, differences in situational involvement should lead to differences in how strongly consumers evaluate risk and how much information they seek. Dholakia also notes that marketers of pain relievers use motivational concern and anxiety to encourage consumers to process more detailed information about brands.

In the present study, this distinction suggests that product category may moderate the relationships in the conceptual model. The mediation pathways through perceived risk and source credibility are expected to be stronger for pain than for cold and flu products because pain involves higher involvement and greater risk salience.

Generational differences: Millennials vs. Generation Z

Health literacy as a foundational construct

Before looking at how different generations of people handle health-related information, it is needed to understand what "health literacy" means. Sørensen et al. (2012), in a systematic review of 17 definitions and 12 conceptual models, propose an integrated definition: health literacy "*is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course*" (p. 3).

This definition encompasses four core competencies : accessing, understanding, appraising, and applying health information, applied across three domains (healthcare, disease prevention, health promotion), yielding a matrix of 12 dimensions of health literacy (Sørensen et al., 2012).

The relevance of this construct for the Swiss OTC market is underscored by the Health Literacy Survey Switzerland 2019-21, which reveals that 44% of the Swiss population exhibits inadequate digital health literacy and 28% have problematic digital health literacy (De Gani et al., 2021). These figures suggest that the ability of Swiss consumers to navigate, evaluate, and apply health information, whether from a pharmacist, a website, or a social media influencer, varies substantially across the population. This variability is the foundation upon which generational differences in OTC purchase behavior are hypothesized. The factsheet on digital health literacy further specifies that 72% of the Swiss population has difficulty dealing with digital health information, with 66% finding it difficult to judge whether information is reliable and 63% struggling to assess whether information is offered with commercial interests (De Gani et al, 2021).

Pigazzini et al. (2024) used data from the Survey of Health, Ageing and Retirement in Europe (SHARE) to provide more evidence for Switzerland. They studied 1,424 Swiss people aged 58 and older. They found that 68.5% of the respondents had sufficient health literacy. 23.5% of the respondents had problematic health literacy, and 8.0% of the respondents had inadequate health literacy. They also found that people who have more difficulty reading and understanding health information use healthcare more than people who have less difficulty. People with poor health literacy saw general practitioners more often but saw specialists less often. This suggests that people with lower health literacy may need to use primary care more often and use fewer specialized services.

Pigazzini et al. (2024) focused on older adults, but their findings are still relevant to the generational comparison in the present study. If people of different ages have different levels of health literacy and if this affects how they use healthcare, then differences in health literacy between Millennials and Generation Z could influence how these groups respond to the information and marketing in this thesis. The Swiss Health Survey 2022 provides some context in this regard. The survey found that 79.9% of people aged 15–24 and 79.4% of those aged 25–34 had visited a doctor at least once during the previous year (FSO, 2023). These figures show that both age groups use formal healthcare services and therefore have some exposure to healthcare professionals as sources of information.

Pharmacists may be particularly relevant in this context because they are generally easier to access than doctors and can provide advice for minor health problems that do not always require a prescription.

The challenges of navigating the Swiss healthcare system are further documented by two additional dimensions of the Health Literacy Survey Switzerland 2019-21. The factsheet on navigation health literacy reveals that a significant proportion of the Swiss population struggles to find the appropriate healthcare services and to understand the structure of the healthcare system (De Gani et al., 2021). In the OTC context, this navigation difficulty is particularly relevant because for example consumers must distinguish between products available in pharmacies only, products also available in drugstores, and products available in all retail outlets. This is a classification system that presupposes a level of regulatory awareness that many consumers may lack. Additionally, a factsheet on self-management competencies shows that many people have trouble managing their own health on their own (De Gani et al., 2021). It supports the idea that patients' ability to make independent decisions about OTC medications is limited by certain skills they lack. In this case, pharmacists can help by providing advice that patients can use instead of just giving them reassurance.

Generational characteristics: digital natives with distinctive behaviors

Wandhe (2024) talks about how Millennials and Generation Z behave and think differently at work and when buying things. Millennials grew up during the transition to digital technologies. They tend to value collaboration, feedback, and stable relationships with brands. They can also be more price-sensitive, but once they trust a brand, they'll stay loyal to it. Generation Z, on the other hand, has grown up with internet access and digital technologies available to most people. They prefer to communicate quickly and visually, and they're more comfortable with digital and video-based content.

Recent marketing research also shows differences between Generation Z and Millennials as consumers. Priporas et al. (2017) did a study of Generation Z consumers. They found four main things that young people want from stores: speed, personalization, technology, and a good experience. Generation Z expects quick service, customized experiences, and easy interaction with digital technologies. Millennials are also comfortable with digital technologies, but they tend to be more loyal to brands and may not expect things to be done right away.

Francis and Hoefel (2018), in McKinsey's "True Gen" report based on survey of 2,321 respondents conducted in Brazil, identified four characteristics of Generation Z: the "undefined ID" (resistance to single-label identity), the "communaholic" (valuation of connectivity and belonging), the "dialoguer" (preference for dialogue over confrontation), and the "realistic" (pragmatic decision-making over ideological commitment). The authors also report that

Generation Z is more skeptical of traditional commercial messages and expects more genuine interaction from brands. This may be important for this study, especially when thinking about how important it is to trust the source of the information.

The Deloitte Global 2025 Gen Z and Millennial Survey provides more recent evidence for the Swiss context. The survey includes 23,482 respondents across 44 countries and provides a separate profile for Switzerland. In Switzerland, healthcare and disease prevention were among the main concerns reported by both generations, ranking second for Millennials (20%) and fifth for Generation Z (18%). Mental health was also a major concern among Swiss Gen Z respondents, with 27% identifying it as one of their main concerns, above the global average.

The Deloitte (2025) data also show that 39% of Swiss Gen Z and 30% of Swiss Millennials reported feeling stressed or anxious most or all of the time. Among Swiss Gen Z respondents who experience anxiety, financial concerns (41%) and physical health (39%) were the main reasons for their anxiety. These findings may be important for this study because people's concerns about health and money could affect how they judge OTC medications. However, the available data do not show that Gen Z has a higher perceived risk of adverse reactions to OTC products than Millennials. This study looks at whether these differences between generations are seen in the risk and credibility pathways in the model.

Generational differences in health information seeking

The manner in which different generations seek health information has been the subject of a growing number of empirical research. Sinha and Serin (2024) compared the online health information seeking (OHIS) behaviors of two groups of people in a survey of 1,137 respondents in the United States. The first group was digital natives, aged 18-42, including both Gen Z and Millennials. The second group was digital immigrants, aged ≥43. Their results reveal qualitatively distinct patterns: digital natives searched for health wellness information significantly more frequently ($p < .001$), whereas digital immigrants searched for health guidance ($p < .001$) and health management information ($p = .001$) more frequently.

There's a difference between wellness information (proactive, preventive, and lifestyle-oriented) and guidance information (symptom-specific, treatment-oriented, and clinician-directed). This difference is important when thinking about the context of OTC purchases. Younger consumers are supposed to be more likely to come across OTC product information by searching for wellness information online. On the other hand, older consumers should be more likely to come across it by searching for symptoms and asking doctors questions.

However, Sinha and Serin (2024) found no significant differences between the two generations regarding preventative health actions ($p = .85$). This result suggests that the generational divide lies in how information is sought, not in whether it translates into health behavior.

Jiao et al. (2023) did a study with 1,862 people in China. They compared people aged 18-26 with older people, and their findings are confusing. Despite using the internet more often to learn about their health, Generation Z has lower levels of health empowerment and is less likely to look for health information. It was found that Gen Z and the older population both showed better health empowerment (Gen Z: $\beta = .070$, $p = .002$; older population: $\beta = .089$, $p < .001$) when they sought health information from doctors.

This result aligns with the source credibility framework discussed in the previous sections. Even for the generation that is most comfortable with digital technology, expert sources still play a special role in health decision-making that digital channels cannot replicate.

The infodemic and generational trust in information sources

The COVID-19 pandemic has provided a natural experiment illuminating how younger generations interact with health information on social media. Blandi et al. (2022), analyzing data from the WHO "Social Media and COVID-19" study conducted in 24 countries on over 23,000 subjects aged 18-40, provide a descriptive portrait of Generation Z and Millennial health information behavior at global scale.

Their research confirm that social media were the dominant source of information for COVID-19 among young people across all income levels (approximately 79% in high-income countries, 87% in upper-middle-income countries, and 90% in lower-middle-income countries). However, more than half of the young respondents said that they pay attention to scientific content (around 51% in high-income countries). Finally, and importantly, most young participants said they felt overwhelmed by all the information, but this didn't stop them from looking for information.

This combination of reliance on social media, preference for scientific content, and feeling overwhelmed could characterize the informational environment in which Millennials and Generation Z approach OTC purchase decisions. As noted by Blandi et al. (2022), previous research suggests that Generation Z users frequently search for informative content through social media but remain highly distrustful of these platforms. This tension between dependence on and distrust of digital sources creates the psychological conditions under which the pharmacist's expert credibility may become particularly influential.

Information avoidance as a Generation Z-specific moderator

While the previous section describes how younger generations look for health information, Jia and Li (2024) examine another behavior that is less studied: how Generation Z avoids health information. Based on focus group discussions, they suggest that health information avoidance is driven by sociocultural, cognitive, and affective factors. Some of these findings also differ from those discussed earlier. Sociocultural factors generally involve the influence of social environments and cultural norms that may discourage individuals from engaging with certain health topics. Cognitive factors include information overload, where Generation Z participants tend to disengage when information is seen as excessive, contradictory, or too complex, and low source credibility, which triggers avoidance when health information is seen as commercially motivated, unscientific, or biased. Finally, affective factors involve emotional reactions. Negative emotions, such as anxiety, can lead to information avoidance. This is especially true when health information conflicts with how individuals see themselves or with body-related expectations.

This avoidance mechanism is very important for the study. For Generation Z, source credibility is not just a standard variable. It acts like a gate. If the credibility is too low, these buyers do not just ignore the message. They actively reject it.

This shows a big difference between the generations. For Millennials, a lack of trust simply makes the information less important. For Generation Z, a lack of trust removes the information completely from the final decision.

Generational differences and the trust calculus in healthcare

The findings from Sinha and Serin (2024) and Jiao et al. (2023) say that both generations use digital channels extensively, but Generation Z's lower health empowerment and higher propensity for information avoidance suggest that their cost-benefit calculation more frequently resolves against trusting digital health information, pushing them, paradoxically, toward the same expert-dependent position that Lupton (1997) identified for the "passive patient" in section ‘From patient to consumer: Empowerment in health’.

The information reviewed in this section supports the idea that generation affects the mediation pathways established after, although the direction of this effect is not yet known. There are two possible explanations for this. The first, theoretically motivated by the information avoidance framework (Jia & Li, 2024) and the trust calculus literature (Rahman et al., 2021), predicts that source credibility will exert a stronger effect on purchase intention among Generation Z

respondents, who face a credibility-dependent decision process. The second, based on the fact that Millennials tend to be more loyal to brands, as documented by Francis and Hoefel (2018), predicts the opposite pattern: Millennials have come to trust brands after using their products for a long time. This may make them more likely to trust the credibility of the pharmacist as a way to confirm that the product is safe. The present research treats generational moderation as an exploratory question rather than a directional hypothesis, which is consistent with the recommendation of McEachan et al. (2011) to formalize moderation effects as empirically testable rather than theoretically predetermined.

Synthesis and identified research gaps

The literature review presented in the first section through the last one has established the theoretical foundations for understanding how Millennials and Generation Z navigate the Swiss OTC purchasing journey. Several key findings emerge from this analysis.

First, patients are a mix of being in control and needing expert help when making decisions about their treatment (Lupton, 1997). The balance between these two types of decision-making depends on how risky the treatment options seem and how much they trust the information they have (Mitchell, 1999; Kahneman & Tversky, 1979; Ohanian, 1990; Hovland & Weiss, 1951; Kautsar et al., 2012).

Second, the connection between marketing signals (like price and brand) and the desire to buy something is not direct. Instead, it is influenced by how good, risky, and valuable the product seems to the customer. Experiences and trust also play a role in how loyal customers are to a brand when buying OTC products (Lodorfos et al., 2006). The risk-value trade-off is the main way that people think about the decision to buy OTC products, which is supported by research that shows the TPB is a good way to understand health-related behaviours (McEachan et al., 2011).

Thirdly, the pharmacist's expertise and the influence of social media play different roles. These roles may be explained by the ELM (Petty & Cacioppo, 1986). According to this model, the pharmacist's expertise is considered to be more credible, and social media influence would only have an effect in the early stages of awareness and appeal. This is also shown in the Swiss context by Diaz Hernandez et al. (2024), who prove that pharmacies are among the three most trusted health information sources (81–89%), even though they are only used 4th most often. The pharmacist's clinical effectiveness is also confirmed by netCare data, which shows that 84–88% of problems are solved by the pharmacist (Erni et al., 2016; Stämpfli et al., 2022).

Fourth, these mediation pathways are expected to be moderated by two things: the type of product (pain vs. cold/flu). Pain relievers have been shown to be used more in Switzerland over the last thirty years (FSO, 2024), and so are more important and risky (Dholakia, 2001). The other thing is generation (Millennials vs. Generation Z). This affects how people look for health information (Sinha & Serin, 2024; Jiao et al., 2023) and how much credibility information needs to have to be used (Jia & Li, 2024).

Despite the wealth of information in this field, there are still three important gaps in the current literature. First, no study has looked at how marketing signals (like price and brand) and sources of influence (like a pharmacist or a social-media content creator) affect the intention to make a purchase in a single model that includes all these factors, in the context of OTC products in Switzerland. Secondly, there is no solid evidence to show how risk and trust affect the choices of Millennials and Generation Z. Thirdly, no research has compared how these mediation pathways operate across different types of treatments (pain vs. cold/flu), even though there are theoretical reasons to expect them to work differently based on how much they involve the body.

To position the present research honestly within the existing literature, it is necessary to explicitly acknowledge its relationship to Aufegger et al. (2021). The present thesis operates as a conceptual replication and extension of Aufegger et al.'s experimental model in three directions.

First, it tests the risk-value trade-off mechanism in a national context with different generic-drug adoption dynamics (the Swiss generic paradox developed earlier) to evaluate the cultural and institutional generalizability of their German findings. Second, it looks at different age groups based on the current Swiss population (FSO, 2025). This goes beyond the original sample. Third, it clearly includes the source of the information (pharmacist versus social media content creator) as a third factor in the experiment. This is based on the idea that the credibility of the source is important, as described by Ohanian in 1990. It is also based on the ELM of Petty and Cacioppo from 1986 and the Swiss empirical trust hierarchy documented by Diaz Hernandez et al. in 2024. This helps the current research add to the conversation in a specific way, using the ideas of context, demographics, and theory, instead of trying to be completely new.

The research model in chapter ‘Conceptual Framework and Hypothesis Development’ tries to address these three gaps. It does so by combining the ideas, pathways, and hypotheses from this review of the literature into an experimental framework that can be tested.

CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

This chapter uses the information from the review of the literature to create a set of testable ideas. It is divided into two sections. The first section presents seven hypotheses (H1–H7). These hypotheses are divided into three groups. The first group is the direct effects of the manipulated factors on purchase intention (H1–H3). The second group is the indirect effects through perceived risk/quality, perceived value, and source credibility (H4–H5). The third group is the moderating effects of product category and generation (H6–H7). The second section combines these seven ideas into one overall model. The figure shows how each relationship is linked to the theoretical arguments presented in the literature review. Each relationship is first considered separately based on previous research and is then added to the overall model. This should make sure that the final model is based on the arguments from the literature review and doesn't add new relationships at this stage.

Hypothesis Development

Direct Effects of Manipulated Factors on Purchase Intention

The first group of hypotheses tests the main effects of the three changed factors (brand, price, and information source) on purchase intention. These direct effects form the basis of the experimental design's causal claims and must be established before examining the mechanisms that explain them.

H1 – The brand effect

The literature review established that brand recognition in the OTC pharmaceutical context operates as a cognitive shortcut for managing clinical uncertainty (section ‘Marketing signals: Price and brand awareness’). Aufegger et al. (2021) provide the most direct empirical evidence: in their experimental sample, branded OTC drugs significantly increased perceived quality ($b = -0.715$, $p < .001$) and decreased perceived risk ($b = 0.492$, $p < .05$) compared to generic equivalents, with these effects translating into elevated purchase intention. This mechanism is theoretically grounded in signaling theory (Spence, 1973; Erdem & Swait, 1998, 2004), whereby brands compress complex quality information into a single recognizable cue. The Swiss context makes this process stronger because Switzerland has a much lower use of generic drugs (17% compared to 80% in Germany, according to Wouters et al., 2017). This suggests that Swiss consumers have not been as used to generic alternatives (in comparison to other European countries) and so they trust brand signals more to show that something is good.

Lodorfos et al. (2006) further confirm that brand trustworthiness is a primary determinant of OTC purchase attitude, with 61% of surveyed consumers reporting brand loyalty driven by positive past experience.

H1: Among Swiss Millennials and Generation Z, branded OTC medications elicit a significantly higher purchase intention than generic OTC medications.

H2 – The price effect

The direction of the price effect constitutes the most theoretically contested prediction of the present research. Aufegger et al. (2021), in the German context, found that low price counterintuitively increased perceived quality and decreased perceived risk, leading to higher purchase intention for low-priced generics than for high-priced branded drugs. However, as developed in section 'Marketing signals: Price and brand awareness', this counterintuitive finding must be interpreted within the context of a healthcare system where generic substitution is both legally promoted and culturally normalized, a configuration that does not describe Switzerland. Wouters et al. (2017) document that manufacturer prices in Switzerland are on average more than 2.5 times higher than in Germany and more than 6 times higher than in the UK (which is also a country with a high level of use of generic drugs (83%)). In this context, Kirmani and Rao's (2000) review of the signaling literature supports the classical prediction: consumers rely on price and other market signals when they lack objective information about a product's quality. Applying their signaling framework to the OTC context, this could imply that when there is no official confirmation that two similar products are equally effective (bioequivalence), patients and doctors will likely depend on price as an indicator of efficacy. This is especially true in the health sector, where people often feel more strongly about avoiding loss (Kahneman & Tversky, 1979) and don't want to settle for a less effective product. The present research therefore predicts that Aufegger et al.'s (2021) counterintuitive finding will not replicate in the Swiss context; instead, the classical signaling mechanism is expected to prevail.

H2: Among Swiss Millennials and Generation Z, high-priced OTC medications elicit a significantly higher purchase intention than low-priced OTC medications, reversing the counterintuitive finding of Aufegger et al. (2021).

H3 – The information source effect

The literature review established that expert sources (pharmacists) and social sources (social-media content creator) exert different forms of influence on OTC purchase decisions (section 'Sources of influence: Expert (pharmacist) vs. social (social-media content creator)'). Three

different types of evidence support the idea that expert sources have a stronger impact on whether or not people plan to make a purchase. First, Alarsali and Aghaei (2022) documented that reference groups including pharmacists show a correlation of r = 0.610 with OTC purchase decision, compared to r = 0.439 for digital marketing. Second, Kautsar et al. (2012) show that people trust the information they get from doctors and pharmacists more than other sources. Diaz Hernandez et al. (2024) did a study that was very important for the Swiss context. They found that 81% to 89% of people trust Swiss pharmacies. This is much higher than the proportion of people who trust online sources. The ELM (Petty & Cacioppo, 1986) may help explain this difference. When it comes to health decisions that involve more involvement, consumers may rely more on the central route of persuasion, which values the quality and expertise of the source. This could make pharmacists more important than digital influencers, whose influence may depend more on peripheral cues.

H3: Among Swiss Millennials and Generation Z, information about OTC products from a pharmacist makes people more likely to buy the product than information from social-media content creators.

Mediating Effects: Psychological Mechanisms of Influence

The second group looks at how some factors affect the purchase intention, and not just whether they do. Brand and price are thought to affect people in a certain order, starting with how good, risky, and valuable they seem. This idea is mostly based on the work of Aufegger et al. (2021) and Dodds et al. (1991). Consistent with Ohanian's (1990) framework, the effect of information source is hypothesized to operate through source credibility, specifically through its expertise and trustworthiness dimensions.

H4 - Serial mediation of brand and price effects through the risk-value trade-off

The risk-value trade-off is the central cognitive mechanism through which marketing signals translate into OTC purchase intention (section ‘Risk perception’). Aufegger et al. (2021) empirically demonstrate full mediation in their German sample: when perceived quality, perceived risk, and perceived value are controlled for, the direct effects of brand and price on purchase intention become non-significant (b = 0.004, p = .988 for brand). The theoretical roots of this chain are established by Zeithaml (1988), who defines perceived value as the cognitive output of a trade-off between benefits that they get (for example, quality) and the sacrifices that they have to make (for example, money, time, risk). This thesis predicts that this mediation mechanism replicates in the Swiss context, even if the direction of individual effects (H1, H2)

differs from Aufegger et al.'s findings. In other words, the way it works should stay the same no matter what, but the numbers in the formula might change depending on how signals are sent in different countries. Because perceived quality and perceived risk were conceptualized as two distinct first-stage mediators converging on perceived value, the two serial pathways were estimated separately using PROCESS Model 6. The analyses therefore assess each serial indirect effect independently rather than estimating both first-stage mediators simultaneously in a single model.

H4a: The effect of brand on purchase intention (H1) operates through two serial indirect pathways:

1. brand → perceived quality → perceived value → purchase intention
2. brand → perceived risk → perceived value → purchase intention.

H4b: The effect of price on purchase intention (H2) operates through two serial indirect pathways:

1. price → perceived quality → perceived value → purchase intention
2. price → perceived risk → perceived value → purchase intention.

H5 - Mediation of source effect through source credibility

The literature review established that source credibility is a multi-dimensional construct (section 'Trust and credibility of the source') and that, in the OTC context, its expertise and trustworthiness dimensions (Ohanian, 1990) are the decisive determinants of purchase intention. McGuire's (1985) distinction between internalization (adoption of a message because it is perceived as accurate, driven by expertise and trustworthiness) and identification (adoption driven by attractiveness) supports the theoretical argument that the pharmacist's influence operates primarily through the internalization pathway. Kautsar and others (2012) show that people's decisions to buy OTC products are influenced by reliable sources of information, rather than by social pressure. The attractiveness dimension of Ohanian's scale is not included in this research model because, in theory, pharmacists in institutional settings do not primarily base their interactions on visual or superficial appeal. Also, if attractiveness is included, it would make the difference between internalization and identification less clear. This is important because it is central to distinguishing expert from social influence.

H5: The effect of information source on purchase intention (H3) is mediated by source credibility, captured through its two dimensions of perceived expertise and perceived

trustworthiness (Ohanian, 1990). Pharmacists are expected to score significantly higher on both dimensions than digital influencers, and this credibility differential fully or partially mediates the relationship between source type and purchase intention.

Moderating Effects: Contextual and Individual Boundary Conditions

The third group looks at the limits of what was suggested in the first and second groups. There are two possible moderators: the first is the type of product (pain vs. cold/flu), and it is based on a model by Dholakia (2001) that looks at why people buy things. The second is the generation (Millennials vs. Generation Z), and it is used as an interesting question rather than as a prediction.

H6 - Moderation by product category (pain vs. cold/flu)

Section ‘Consumer involvement and product category (Pain vs. Cold/flu)’ showed that painkillers and medicines for the common cold and flu have different levels of physical risk. Pain, particularly chronic or recurrent pain, should activate both enduring involvement (ongoing concern with the product class) and situational involvement (concern triggered by a precise moment), with a high physical risk dimension driven by documented drug interaction risks (Indermitte et al., 2007). Cold/flu medications, by contrast, should typically activate only situational involvement and are associated with a lower physical risk profile due to the self-limiting nature of the underlying condition. Dholakia's (2001) motivational process model predicts that higher situational involvement intensifies risk perception and amplifies the weight assigned to source credibility in the decision process. The data from Switzerland (FSO 2024) show that the use of painkillers went up from 12% to 26% of the population over 30 years. This highlights the importance of this category for managers and in theory. The current research therefore predicts that the mediation pathways established in H4 and H5 will be stronger in the pain category than in the cold/flu category.

H6a: The serial mediation of brand and price effects through perceived quality, perceived risk, and perceived value (H4) is significantly stronger in the pain category than in the cold/flu category.

H6b: The mediation of the source effect through source credibility (H5) is significantly stronger in the pain category than in the cold/flu category.

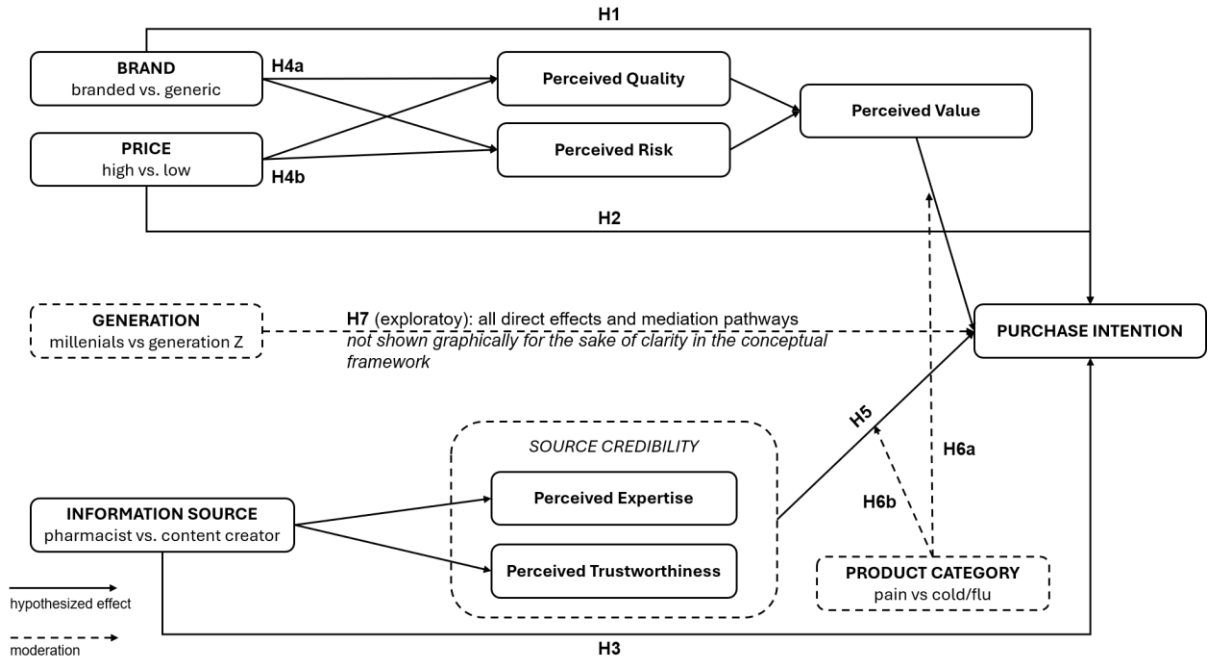
H7 - Exploratory moderation by generation (Millennial vs. Generation Z)

As developed in section 'Generational differences: Millennials vs. Generation Z', the existing literature supports the expectation that generation could moderate the mediation pathways, but does not provide robust empirical grounds for predicting the direction of this moderation. Two competing theoretical predictions emerge from the literature review. The first perspective suggests that source credibility plays a more decisive role in shaping Generation Z's purchase intentions. Rooted in the concepts of information avoidance (Jia & Li, 2024) and trust calculus (Rahman et al., 2021), this view highlights that Generation Z consumers rely heavily on perceived trustworthiness as a filter. For this demographic, a lack of trust acts as a primary barrier to consumption. The second is based on the idea that Millennials tend to be loyal to brands (Francis & Hoefel, 2018; Priporas et al., 2017) and have more stable spending habits. This idea suggests that Millennials, who have grown to trust brands after using their products for a long time, might be more attached to brand signals (H1) and pharmacist credibility (H5) as ways to confirm information. The current research suggests that H7 is an exploratory, non-directional hypothesis.

H7 (exploratory): The strength of the direct effects (H1, H2, H3) and of the mediation pathways (H4, H5) differs significantly between Millennial and Generation Z respondents. The direction of this generational moderation is left to empirical investigation.

A summary table is available in Appendix 1.

Figure 3 - Conceptual Model



METHODOLOGY

This chapter explains how the conceptual model was changed into a real study. It presents the experimental design and stimuli, the measurement scales, the sampling and data-collection procedures, the analysis plan, and the pre-test.

Research Design

The research used an experimental design for three main reasons. First, the research question focuses on cause-and-effect relationships. It looks at how changes in the independent variables can affect purchase intention (Fisher, 1935). Second, a factorial design permits the testing of multiple hypotheses (H1–H7) in a single study and the examination of possible interaction effects. Third, using scenarios allows for the manipulation of the main factors while keeping other information consistent. This also creates a more realistic decision context than isolated survey questions (Aufegger et al., 2021; Sansgiry et al., 2001).

The design combines three between-subjects manipulated factors: brand (branded vs. generic), price (high vs. low), and information source (pharmacist vs. social-media content creator). Category (pain vs. cold/flu) is manipulated within subjects. This results in a 2*2*2*2 mixed factorial design. Each participant is randomly assigned to one of the eight between-subjects conditions and evaluates both category scenarios in a randomized order.

The choice of a within-subjects manipulation for category is deliberate. A fully between-subjects design would require 16 cells, doubling the required sample size. Within-subjects designs also increase statistical power for the H6 moderation test, as each participant serves as their own control across categories (Aguinis & Bradley, 2014). Randomization of the order of category presentation was intended to control for order effects.

Generation (Millennial vs. Generation Z) was not manipulated but measured through demographic item and used as a quasi-experimental grouping variable for the multi-group analysis specified in H7.

The eight experimental cells are summarized in Table 2.

Table 2 - The eight experimental cells

Condition	Brand	Price	Source	Category (within)
1	Branded	High	Pharmacist	Pain + Cold/flu

2	Branded	High	Social-media content creator	Pain + Cold/flu
3	Branded	Low	Pharmacist	Pain + Cold/flu
4	Branded	Low	Social-media content creator	Pain + Cold/flu
5	Generic	High	Pharmacist	Pain + Cold/flu
6	Generic	High	Social-media content creator	Pain + Cold/flu
7	Generic	Low	Pharmacist	Pain + Cold/flu
8	Generic	Low	Social-media content creator	Pain + Cold/flu

Development of stimuli

Rationale for the scenario-based stimuli

The experiment used an experimental vignette methodology (EVM), which combines controlled manipulations with realistic scenarios to examine how participants respond to different experimental conditions (Aguinis & Bradley, 2014). In this study, the stimuli were presented as scenario-based visual vignettes. Each vignette combined a short written scenario with a realistic image of the purchasing situation. This format made it possible to include the experimental manipulations in a context that was closer to a real-life situation.

The use of vignette-based experiments is also supported by Hainmueller et al. (2015). Using Swiss naturalization referendums, they compared the results of vignette and conjoint survey experiments with actual voting behavior. Their findings showed that the effects observed in the survey experiments were similar to those found in real-world voting behavior. Finally, the use of scenario-based stimuli is consistent with previous research on OTC pharmaceuticals, including Aufegger et al. (2021).

Brand and product manipulation

For the pain category, the main active ingredient is paracetamol 500 mg. There are three reasons for this choice. First, it is the most used OTC painkiller in Switzerland (Helsana data via Gruffat

X., 2025). Second, it matches the normal Swiss OTC dose, because a 1 g dose needs a prescription since 2003. Third, Aufegger et al. (2021) used it, which makes it possible to compare the results. For the cold and flu category, the study used a mix of paracetamol 500 mg and pseudoephedrine 30 mg. This mix is similar to popular Swiss OTC medicines like NeoCitran® and Pretuval®. Because of this, both groups share paracetamol. This common base helps to isolate the category effect (H6) from the effect of the active ingredient itself.

The branded condition used a fictional brand name, while the generic condition used the active ingredient name alone (with a basic brand name "Helvex" printed in very small letters at the bottom of the packaging, just like traditional and genuine generic brands). It was decided that it is necessary to create fictional brands because real Swiss brands (Dafalgan®, Algifor®) already have a strong reputation that would be difficult to change. People would respond to the specific positioning of the brand rather than to the more general concept of "branded OTC drug" (Erdem & Swait, 2004; Wason et al., 2002). Aufegger et al. (2021) used the same logic, but they changed some of the extra things in each of the conditions. There are pros and cons to this choice, which will be discussed later.

Price manipulation

Price calibration makes sure that the results are based on what really happened in 2026 Swiss shops. For the pain category (paracetamol 500 mg, with a maximum of 20 tablets), the high-price condition is set at CHF 7.90. This is based on the prices of the two most popular branded tablet products on the Swiss market: Dafalgan® Dolo 500 mg tablets (CHF 7.75 for 20 tablets) and Panadol® S 500 mg tablets (CHF 7.80 for 20 tablets), as seen at Amavita and Sun Store (2026). The low-price condition is set at CHF 2.50, the median of the four leading generic equivalents listed on the Swiss Compendium (Paracetamol Mepha®, Spirig HC®, Sandoz® eco, Zentiva®, ranging from CHF 2.40–2.60). The resulting high/low ratio of 3.16 is similar to the German ratio of 2.83 calculated in Aufegger et al. in 2021. Nevertheless, it remains difficult for consumers to get a sense of a comparable price, since prices vary from one pharmacy to another (Benn, 2026).

For the cold/flu category (paracetamol + pseudoephedrine, 12 sachets), the high-price condition is CHF 21.50. This is the same as the median of the three most comparable branded products (NeoCitran® Grippe at CHF 22.95, Pretuval® at CHF 21.50, NeoCitran® Rhume at CHF 18.70). The low-price condition is CHF 16.50, which is the same as Neotylol® Grippe (Nobel Pharma), the only generic combination product available in Switzerland. The resulting ratio of

1.30 shows that there is not much choice of generic medicines in this category, which is an important part of the Swiss cold and flu market.

Swiss prices are much higher than in other European countries, as Wouters et al. (2017) found. A table that shows all the prices is available in Appendix 2.

Information source manipulation

The pharmacist presents the product to the customer. The pharmacist is a Swiss-registered professional (FPH). She wears a white coat to show that she is a pharmacist. This operationalisation activates Ohanian's (1990) expertise dimension through visible professional credentials (McGuire, 1985) and reflects the empirical centrality of pharmacists in Swiss health trust (Diaz Hernandez et al., 2024) and OTC consultations (Kautsar et al., 2012).

The "social-media content creator" condition presents the same product in an Instagram-style content creation setting. In this setting, a health and wellness digital influencer (~50,000 followers) is shown recording a video for her Instagram content rather than appearing in a static post. This method is similar to the approach used by Djafarova and Rushworth in 2017, who looked at how believable non-traditional celebrities (like bloggers or Instagram stars) were. The information content (why it's used, the main active ingredient, dosage, important warnings, and price) is kept the same in both source conditions. If there are differences between the source conditions, they must be because of how believable the source is, not because of differences in the information (Wason et al., 2002). The full source-manipulation matrix is in Appendix 3.

Scenario structure and pre-assessment

Each stimulus shows an OTC product package, its price, a recommending source, and a short contextual text. Each participant sees two scenarios: one for pain medication and one for cold and flu medication. The order of the two scenarios is randomized. In total, 16 different images were created.

The products use made-up brand names so that people won't think of any Swiss brands when they see them. Branded packages have a more colorful and commercial appearance (trying to replicate certain design elements of well-known brands, or recognizable brand markers such as Neocitran®'s orange color), while generic packages have a simpler and more clinical appearance.

The source that recommends the product is either a pharmacist in a pharmacy or a digital influencer at home. The same face was used in both conditions to keep physical appearance the same and avoid differences related to the person shown.

The price is shown directly on the image. The main text doesn't change, except for the category of symptoms. All information about the products is kept the same, so any differences in the answers of the participants can be linked to the changes made for the experiment. All stimuli are available in Appendix 4.

Before the main study, approximately 20 VERFORA employees reviewed the stimuli during the pre-test. They checked the survey to make sure it worked correctly. They checked things like the language, translation, and display. They also checked if the product information was accurate for the Swiss OTC market in 2026. Finally, they checked if the prices were realistic, if the information was consistent across conditions, and if the treatments were appropriate.

Measurement and operationalization of variables

Adaptation principles

All measurement instruments are drawn from validated published scales, administered on 7-point Likert scales (1 = "strongly disagree" to 7 = "strongly agree"), except for the Health Literacy scale, which used its validated 4-point format (Pelikan et al., 2019). Multi-item scales make it possible to check how well the test works and how consistent the results are. This is done by looking at Cronbach's alpha (target $\alpha \geq 0.70$, as described by Nunnally in 1978).

For constructs originally developed in non-OTC contexts (Stone & Grønhaug, 1993; Dodds et al., 1991), items need to be adapted to the Swiss OTC pharmaceutical setting. Adaptation follows three principles, inspired from the work of Aufegger et al. (2021) who had to adapt some items, and more or less all the articles reviewed for this thesis.

First, each adaptation kept the exact same cognitive dimension as the original text. Second, the changes only modified the category anchors. For example, "personal computer" changed to "OTC drug". The risk vocabulary was also adapted to pharmaceuticals when necessary. Finally, every item was documented in the appendices.

Dependent variable and mediators

Purchase intention was measured with four items adapted from Dodds et al. (1991) and Aufegger et al. (2021). This scale was used in the OTC context, and the results had a reliability

score of 0.96 (see Appendix 5 for more details). The quality perceived by the customer was measured by three items adapted from Dodds et al. (1991), with two items given word for word and one item given in context to make quality work through how well it works as a medicine, the most important quality thing in judging medicines (Williams et al., 2016). Information about adapted items can be found in Appendix 6.

The perceived risk was measured by nine items across three dimensions (performance, physical, financial), adapted from Stone and Grønhaug (1993). The performance and financial dimensions don't need much adaptation, but the physical dimension does. It needs to be translated from computer-specific physical problems (eye strain, backaches) into the pharmaceutical physical-risk vocabulary (adverse side effects, nausea, drowsiness), following the example of Aufegger et al. (2021). More information on adapted items and item-by-item justifications can be found in Appendices 7, 8 and 9.

The perceived value was measured by five items from Dodds et al. (1991) and Zeithaml (1988). These items are used exactly as they appear in Aufegger et al. (2021). Internal consistency of the perceived-value scale was high in both therapeutic categories ($\alpha = .956$ for pain; $\alpha = .953$ for cold/flu) (see Appendix 10).

Researchers can measure how credible a source is using a scale of 10 items. This scale was first used by Ohanian in 1990. The items cover how knowledgeable the source is and whether it is trustable. The attractiveness dimension is excluded for two reasons as said before: customers in a pharmacy setting do not base their decisions on how a pharmacist looks and McGuire's (1985) distinction between internalisation and identification is central to the present research's expert-versus-social source contrast. The items are given out exactly as they appear in the Ohanian adjective-pair scale (see Appendix 11).

Manipulation checks and control variables

Two manipulation checks verify that the brand and source manipulations operated as intended (Aufegger et al., 2021). Because both checks are administered after the scenario evaluations, exclusion based on a single failed check would condition the sample on a post-treatment variable and threaten the group equivalence created by randomization (Montgomery et al., 2018) so only participants who fail both checks are therefore excluded.

Table 3 - Manipulation checks

Code	Manipulated factor	Check item	Format
MC1	Brand	"Were the products you just reviewed a brand-name drug or a generic drug?"	Forced choice: "branded" / "generic"
MC2	Source	"Who presented the product information to you?"	Forced choice: "A pharmacist" / "An acquaintance" / "A content creator" / "A family member"

Four control variables capture individual predispositions that may influence the dependent variable independently of the manipulations: brand loyalty (eight items from Lodorfos et al., 2006, OTC-specific scale, $\alpha = 0.78$ in Aufegger et al., 2021; Appendix 12); price consciousness (eight items from Aufegger et al., 2021, drawing on Sinha & Batra, 1999, Lichtenstein et al., 1993, and Bowling, 2005; Appendix 13); attitude towards generics (five items combining Håkonsen et al., 2009, used by Aufegger et al., 2021, and the validated ATTOGEN questionnaire of Domeyer et al., 2017; Appendix 14); and health literacy (the validated six-item HLS-EU-Q6 short form of Pelikan et al., 2019, derived from Sørensen et al., 2012; Appendix 15).

The control variables are used for three things: to describe the sample, to check that the cells are the same through randomisation, and to test how strong the effects are when individual differences are statistically controlled.

Information about age, sex, education, monthly income, canton, first language is collected. This is done in line with the FSO's rules (see Appendix 16).

Total questionnaire structure

The questionnaire consists of 21 scale items for each of the two scenarios. Additionally, several measures are administered only once: 10 items assessing credibility and trust, 27 control variables, 2 manipulation checks, and 6 demographic questions. This brings the questionnaire to a total of 87 questions. It should take between 15 and 18 minutes to complete, which is within the acceptable time range for online surveys (Revilla & Ochoa, 2017). The full summary of measurements can be found in Appendix 17.

Data Collection Procedure and Sampling

The target population consists of Swiss Millennials (born 1981–1996, aged 30–45 in 2026) and Generation Z adults (born 1997–2008, aged 18–29 in 2026) living in French- or German-speaking cantons.

The sampling frame, which has around 10,000 customers in the two main Swiss language regions, comes from Galenica's Amavita loyalty program customer database. The database was previously sorted according to the following criteria: whether the person is a Millennial or a Gen Z, if they speak French or German, and if they are male or female. Based on standard assumptions about how much effect size matters in mediation analysis (Fritz & MacKinnon, 2007) and the eight-cell factorial design, the minimum target is 240 valid responses (30 per cell * 8 cells).

The survey was done online using LimeSurvey. Participants received an invitation email from Amavita, followed by one reminder seven days later. A CHF 150 Amavita gift card was given away in a prize drawing.

The study followed the standard academic ethics requirements. Before starting the survey, the participants were told about the study and gave their consent. No personal information was linked to the survey responses. The email addresses people provided for the prize draw were stored separately from the survey data and deleted after the draw. The study did not involve any medical procedures and was considered to be very safe.

Data analysis plan

The complete mapping between hypotheses, statistical procedures, PROCESS models, and methodological explanations is provided in Appendix 18.

Preliminary analyses

Before testing the hypotheses, the study performs three preliminary checks. First, it verifies the internal consistency of all measurement scales. This requires a Cronbach's alpha of 0.70 or higher, as stated by Nunnally (1978). Second, manipulation checks are verified and participants who fail both checks are excluded from the results. Third, descriptive statistics were computed for all composite scores in order to inspect their distributions.

Main effects testing (H1, H2, H3)

Three main effects of brand, price, and information source on purchase intention are tested through a 2*2*2 factorial ANOVA with the category factor (pain vs. cold/flu) treated as a

within-subjects variable. Main effects are the standard way to test direct-effect hypotheses in experimental marketing research (Aguinis & Bradley, 2014).

Serial mediation (H4a, H4b)

H4a and H4b suggest that brand and price influence purchase intention in a sequential process. First, they affect how good and risky something seems. These perceptions then influence perceived value, which in turn affects whether or not someone plans to make a purchase. To test this process, the analysis uses Model 6, which is designed for two-stage serial mediation.

A serial mediation approach is used because perceived value does not act as a third mediator. According to Zeithaml (1988), perceived value is the final evaluation that results from balancing the perceived benefits and sacrifices. To reflect this sequence, the mediation chains for perceived quality and perceived risk are estimated separately for each signal and each therapeutic category. This results in eight separate models.

Simple mediation (H5)

H5 suggests that the impact of an information source on purchase intention depends on its credibility. To test this, the analysis uses Model 4, which examines expertise and trustworthiness simultaneously. This approach identifies exactly how much of the effect is driven by each trait and compares them to determine if one is more influential than the other.

A serial approach (Model 6) was ruled out, as there is no theoretical reason to believe that expertise causes trustworthiness or vice versa. Similarly, Models 7 and 14 were excluded because H5 does not involve any conditional effects. Finally, since expertise and trustworthiness naturally overlap, an additional robustness check uses a single, combined credibility score to verify the results.

Moderated serial mediation (H6a, H6b)

H6a and H6b predict that the mediation pathways established in H4 and H5, respectively, are stronger for pain than for cold/flu products. Because therapeutic category was manipulated within subjects, moderated mediation models with a between-subjects moderator, such as PROCESS Model 58, cannot be directly applied to this design. Category moderation is therefore examined in two steps. First, the category * factor interaction terms from the mixed ANOVA are used to test whether the direct effects differ between the two categories. Second, the full mediation models are estimated separately for pain and cold/flu products. The conditional indirect effects and their bootstrap confidence intervals are then compared across the two categories. This approach takes into account the within-subject structure of the category

factor and is consistent with the within-subject mediation framework discussed by Montoya and Hayes (2017).

Exploratory generational comparison (H7)

H7 is a hypothesis that is meant to be explored. It doesn't point to any particular direction. It suggests that the strength of direct and indirect effects may be different between Millennials and Generation Z, but it doesn't specify which direction this difference may be in. The analysis compares groups in different ways. It divides the sample into groups based on age and uses different models for each group. Then, the path coefficients and indirect effects are compared across the two groups.

Robustness checks

The primary models are estimated without covariates. As robustness checks, the focal PROCESS analyses were re-estimated with the measured control variables introduced as covariates meaning that first with the covariates balanced across experimental cells (attitude towards generic drugs, health literacy), then with the full set including brand loyalty and price consciousness.

Pre-test

Before the main data collection, a pre-test was realized as said before. This test verified if the survey was easy to understand and if the information was accurate. It also checked the two languages (French and German) and measured the average completion time. About 40 people participated in this pre-test. They were all native French or German speakers. This group included a mix of relatives and VERFORA employees (~ 50%-50%).

DATA ANALYSIS AND RESULTS

Descriptive statistics and sample profile

The data collection process resulted in 555 complete responses across the two language versions of the questionnaire. After the manipulation-check screening, 37 respondents (6.7%) who failed both checks were excluded from all analyses. This was because their results showed that they had a general problem with paying attention rather than making a mistake when they remembered something. The final sample was 518 responses that were all valid.

The participants were aged 18 to 45 years (M = 31.9, SD = 7.5), providing a good representation of the two target generations, with 277 Millennials (53.5%) and 241 Gen Zers (46.5%). The sample comprised 337 women (65.1% of valid responses), 166 men (32.0%), 4 respondents identifying otherwise (0.8%) and 11 participants preferred not to disclose their sex (2.1%). The predominance of women is consistent with the documented profile of OTC purchasers in Switzerland (Maes et al., 2019). 55.8% of respondents held a tertiary degree (27.6% Bachelor, 24.9% Master, 3.3% doctorate), 26.8% had completed vocational training, 11.6% held an upper-secondary diploma, and 5.8% reported compulsory schooling only. Monthly net income clustered in the lower-to-middle brackets (for example 24.5% below CHF 3,000 and 21.4% between CHF 4,500 and 6,000), a distribution consistent with the young age profile of the sample and 13.3% preferred not to disclose their income. People from all parts of Switzerland were represented, with the largest groups living in Vaud (23.9%), Geneva (15.1%), Bern (12.4%), and Zurich (10.8%). Mother tongues were French (47.5%), German (38.0%), Italian (2.9%), and other (11.6%). 303 participants (58.5%) completed the French questionnaire and 215 (41.5%) the German version.

Random assignment distributed participants across the eight between-subjects cells in group sizes ranging from 57 to 80 and a chi-square test confirmed that cell sizes did not depart from uniformity, $\chi^2(7) = 6.48$, $p = .485$. Table 4 reports the full cell distribution by language and generation, and Table 5 the complete demographic profile.

Table 4 - Cell distribution by language and generation

	Millennials		**Gen Z**		
Experimental cell (Brand/Price/Source)	*German*	*French*	*German*	*French*	**TOTAL**
Branded-High-Pharmacist	16	18	11	15	60
Branded-High-Soc. Med.	7	25	10	15	57
Branded-Low-Pharmacist	11	23	12	16	62
Branded-Low-Soc. Med.	21	20	9	21	71
Generic-High-Pharmacist	17	25	17	21	80
Generic-High-Soc. Med.	13	15	13	20	61
Generic-Low-Pharmacist	11	22	15	20	68
Generic-Low-Soc. Med.	21	12	11	15	59
TOTAL	117	160	98	143	**518**

Note. Cells were all the same size, $\chi^2(7) = 6.48$, $p = .485$. Generation was evenly distributed across conditions, $\chi^2(7) = 3.22$, $p = .864$.

Table 5 - Complete demographic profile

Variable	**n**	**%**
Age	M = 31.87, SD = 7.49	range 18-45
Sex		
Women	337	65.1%
Men	166	32.0%
Other	4	0.8%
Not disclosed	11	2.1%

Generation		
Millennials	277	53.5%
Gen Z	241	46.5%
Education		
Compulsory school	30	5.8%
Vocational training	139	26.8%
Upper secondary	60	11.6%
Bachelor	143	27.6%
Master	129	24.9%
Doctorate	17	3.3%
Monthly net income		
<3,000 CHF	127	24.5%
3,000-4,500 CHF	82	15.8%
4,500-6,000 CHF	111	21.4%
6,000-8,000 CHF	72	13.9%
8,000-12,000 CHF	49	9.5%
>12,000 CHF	8	1.6%
not disclosed	69	13.3%
Canton		
VD	124	23.9%
GE	78	15.1%
BE	64	12.4%
ZH	56	10.8%
FR	40	7.7%
SG	27	5.2%
NE	26	5%
VS	18	3.5%
LU	16	3.1%
GR	12	2.3%
BS	10	1.9%
BL	8	1.5%
SO	7	1.4%
AG	6	1.2%
ZG	6	1.2%
JU	5	1%
TG	5	1%
TI	3	0.6%
UR	2	0.4%
SZ	2	0.4%
SH	2	0.4%
OW	1	0.2%

Mother tongue		
French	246	47.5%
German	197	38%
Italian	15	2.9%
Other	60	11.6%
Survey language		
French	303	58.5%
German	215	41.5%

Reliability and validity of measurement scales

Internal consistency was assessed with Cronbach's alpha for each scale and, where applicable, for each measurement occasion (scenario 1 and scenario 2). As Table 6 shows, all fourteen coefficients exceeded the conventional value of .7, ranging from α = .75 (health literacy) to α = .97 (purchase intention, scenario 2). Purchase intention (α = .96/.97), perceived quality (.94/.95), perceived risk (.92/.92), perceived value (.96/.95), source expertise (.96), and source trustworthiness (.97) displayed excellent reliability. The covariates brand loyalty (.86), price consciousness (.82), attitude towards generic drugs (.88), and health literacy (.75) were satisfactory. The five reverse-worded items (BL7, BL8, PC7, AG4, AG5) were recoded before the data were put together and their corrected item-total correlations were positive, confirming that the scoring was correct. The six health-literacy items were also recoded so that higher scores indicate higher literacy. Composite scores were computed as unweighted item means.

Table 6 - Cronbach's alpha coefficients

Variable	Number of items	α (Pain)	α (Cold)
Purchase intention	4	.961	.971
Perceived quality	3	.944	.948
Perceived risk	9	.922	.923
Perceived value	5	.956	.953
Source expertise	5	.964	
Source trustworthiness	5	.965	
Brand loyalty	8	.856	

Price consciousness	8	.816
Attitude towards generics	5	.877
Health literacy	6	.752

Table 7 presents means, standard deviations, and intercorrelations among all composite measures. The correlation pattern conformed to theoretical expectations: perceived quality correlated strongly and positively with purchase intention within each therapeutic category (r = .72 in both), perceived risk correlated negatively with intention (r = −.54 pain; r = −.56 cold/flu), and perceived value positively (r = .59 in both). Perceived expertise and perceived trustworthiness correlated at r = .84 (p < .001). Although these two dimensions are conceptually established as distinct (Ohanian, 1990), the high score of this correlation suggests that caution is needed. Consequently, the parallel mediation model used in this thesis is supported by a robustness estimation using a single composite credibility score. Finally, the sample held on average favorable attitudes towards generic drugs (M = 2.52, SD = 1.27 on the 7-point negative-attitude composite).

Table 7 - Means, standard deviations, and intercorrelations among all composite measures

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Purchase intention (pain)	4.08	1.88	-								
2. Purchase intention (cold)	3.74	1.73	.60**	-							
3. Perceived quality (pain)	4.26	1.53	.72**	.51**	-						
4. Perceived quality (cold)	4.22	1.48	.47**	.72**	.58**	-					
5. Perceived risk (pain)	3.72	1.39	−.54**	−.37**	**−.63****	−.44**	-				
6. Perceived risk (cold)	4.03	1.34	−.38**	−.56**	−.43**	**−.61****	.70**	-			
7. Perceived value (pain)	4.64	1.42	.59**	.37**	.55**	.36**	−.53**	−.32**	-		

8. Perceived value (cold)	3.87	1.27	.36**	.59**	.32**	.55**	−.20**	−.45**	.37**	-	
9. Perceived expertise	4.21	1.93	.45**	.44**	.51**	.52**	−.50**	−.46**	.38**	.30**	-
10. Perceived trustworthiness	4.56	1.80	.43**	.41**	.48**	.48**	−.50**	−.44**	.37**	.27**	.84**

Note. ** p < .01.

Control variables (means, SD): brand loyalty 4.43 (1.10); price consciousness 4.08 (1.08); attitude toward generics 2.52 (1.27); health literacy 2.82 (0.50).

Hypothesis testing

Randomization checks compared the eight experimental cells on all measured individual-difference variables (Table 8). Age, attitude towards generic drugs, health literacy, sex, and generational cohort did not differ across cells (age: $F(7,510) = 0.74$, $p = .641$; AG: $F(7,510) = 1.45$, $p = .184$; HL: $F(7,510) = 1.33$, $p = .236$; sex: $\chi^2(14) = 6.43$, $p = .954$; generation: $\chi^2(7) = 3.22$, $p = .864$), supporting successful randomization. However, brand loyalty ($F(7,510) = 5.38$, $p < .001$, $\eta^2 = .069$) and price consciousness ($F(7,510) = 2.39$, $p = .021$, $\eta^2 = .032$) differed across cells. Follow-up one-way ANOVAs by factor located these differences on the manipulated dimensions which means that respondents exposed to branded stimuli reported higher brand loyalty than those exposed to generics (M = 4.61 vs. 4.27; $F(1,516) = 12.68$, $p < .001$), and scores also shifted along the source factor (BL: $F(1,516) = 12.17$, $p = .001$; PC: $F(1, 510) = 8.42$, $p = .004$), whereas no differences emerged along the price factor (both $p \geq .33$). Since the covariates were measured after the scenario evaluations, this pattern could indicate post-treatment contamination, meaning the stimuli would influence the responses, rather than failed randomization. This is why brand loyalty and price consciousness were not automatically included as covariates in the hypothesis tests since including treatment-affected variables would bias the estimated effects (Montgomery et al., 2018). However, attitude towards generics and health literacy were evenly distributed across the experimental groups. These variables were used as covariates in the main robustness checks. In addition, a fully adjusted model, including brand loyalty and price consciousness, was also tested.

Table 8 - Randomization checks
Panel A. Balance across the eight experimental conditions

Variable	Test	Statistic	p
Age	ANOVA	$F(7, 510) = 0.74$	.641
Attitude toward generics	ANOVA	$F(7, 510) = 1.45$	.184
Health literacy	ANOVA	$F(7, 510) = 1.33$	.236
Sex	χ^2	$\chi^2(14) = 6.43$	.954
Generation	χ^2	$\chi^2(7) = 3.22$	.864
Brand loyalty	ANOVA	$F(7, 510) = 5.38$	**< .001**
Price consciousness	ANOVA	$F(7, 510) = 2.39$	**.021**

Panel B. Post-treatment measures by manipulated factor

Variable	Brand	Price	Source
Brand loyalty	$F(1, 516) = 12.68$, $p < .001$	$F(1, 516) = 0.95$, $p = .329$	$F(1, 516) = 12.17$, $p < .001$
Price consciousness	$F(1, 516) = 4.57$, $p = .033$	$F(1, 516) = 0.08$, $p = .781$	$F(1, 516) = 8.42$, $p = .004$

Order effects were examined by re-estimating the main model with presentation order as an additional between-subjects factor. Neither the main effect of order ($F(1,502) = 0.75$, $p = .386$) nor the Category * Order interaction ($F(1,502) = 0.36$, $p = .550$) was significant, confirming effective randomization of the within-subjects factor. One higher-order interaction, Category * Source * Order, was significant ($F(1,502) = 29.63$, $p < .001$, $\eta p^2 = .056$): when the pharmacist's perspective was compared to the content creator's, the pharmacist had an advantage of 1.73 points at first, but 0.97 points at second. The pharmacist advantage was then smaller when the scenario appeared in second position. Because both orders were balanced across cells, this does not bias the average treatment effect. The present design cannot identify the mechanism behind this position effect, and it should not be read as evidence of habituation to the digital source. This effect is reported here for transparency and category order was subsequently dropped from the main model.

Direct effects (H1–H3)

Hypotheses 1 to 3 were tested with a 2 (brand: branded vs. generic) * 2 (price: high vs. low) * 2 (source: pharmacist vs. social-media content creator) * 2 (therapeutic category: pain vs. cold/flu) mixed factorial ANOVA, with the first three factors manipulated between subjects and category within subjects, and purchase intention as the dependent variable. Table 9 summarizes all model effects and Table 10 the estimated marginal means while Figures 4 and 5 display the two significant interactions.

Table 9 - All model effects

Between-subject effect tests				
Source	df	F	Sig.	ηp²
Brand	1, 510	21.898	< .001	0.041
Price	1, 510	3.101	0.079	0.006
Source	1, 510	108.344	< .001	0.175
Brand * Price	1, 510	0.007	0.935	0.000
Brand * Source	1, 510	3.012	0.083	0.006
Price * Source	1, 510	5.092	0.024	0.010
Brand * Price * Source	1, 510	0.008	0.928	0.000

Within-subject effect tests				
Source	df	F	Sig.	ηp²
Category	1, 510	20.080	< .001	0.038
Category * Brand	1, 510	21.326	< .001	0.040
Category * Price	1, 510	1.191	0.276	0.002
Category * Source	1, 510	1.784	0.182	0.003
Category * Brand * Price	1, 510	0.054	0.816	0.000
Category * Brand * Source	1, 510	0.004	0.951	0.000
Category * Price * Source	1, 510	0.695	0.405	0.001
Category * Brand * Price * Source	1, 510	0.145	0.704	0.000

Table 10 - Estimated marginal means & standard errors for purchase intention

Effect	Level	Estimated marginal means (EMM)	SE
Brand	Generic	4.17	0.09
	Branded	3.58	0.09
Price	Low	3.98	0.09
	High	3.76	0.09
Source	Social-media content creator	3.21	0.09
	Pharmacist	4.53	0.09
Category	Pain	4.03	0.07
	Cold/flu	3.71	0.07
Brand*Category	Generic-Pain	4.48	0.10

	Generic-Cold	3.85	0.10
	Branded-Pain	3.57	0.11
	Branded-Cold	3.58	0.10
Price*Category	Low-Pain	4.10	0.10
	Low-Cold/flu	3.86	0.10
	High-Pain	3.95	0.10
	High-Cold/flu	3.57	0.10
Source*Category	Social media content creator-Pain	3.32	0.11
	Social-media content creator-Cold/Flu	3.10	0.10
	Pharmacist-Pain	4.73	0.10
	Pharmacist-Cold/Flu	4.32	0.10
Price*Source	Low-Social media content creator	3.18	0.13
	Low-Pharmacist	4.78	0.13
	High-Social media content creator	3.25	0.13
	High-Pharmacist	4.27	0.12

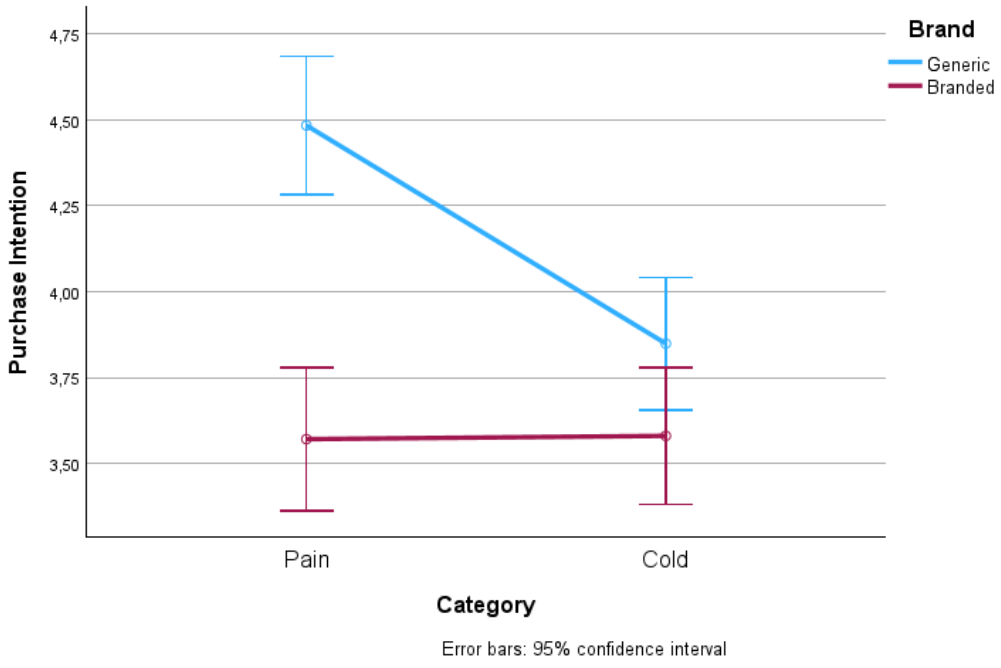
The main effect of brand is significant, but the result is the opposite of what was expected. Actually, people are more willing to buy generic products (EMM = 4.17, SE = .09) than branded products (EMM = 3.58, SE = .09), $F(1,510) = 21.90$, $p < .001$, $\eta p^2 = .041$.

Therefore, H1, which predicted that branded products would be preferred, is not supported. The exact opposite happened, and this unexpected result will be explained in the 'Discussion' chapter. The main effect of price did not reach significance, $F(1, 510) = 3.10$, $p = .079$, $\eta p^2 = .006$, with the marginal trend favoring the low-price condition (EMM = 3.98 vs. 3.76), the opposite of the price–quality signaling effect predicted by H2, which is thus not supported. The main effect of source was the largest effect in the model: recommendations from the pharmacist led to substantially higher purchase intention (EMM = 4.53, SE = .09) than those from the

social-media content creator (EMM = 3.21, SE = .09), $F(1,510) = 108.34$, $p < .001$, $\eta p^2 = .175$, providing strong support for H3.

The within-subjects factor also produced a significant main effect: purchase intention was higher in the pain scenario (EMM = 4.03) than in the cold/flu scenario (EMM = 3.71), $F(1,510) = 20.08$, $p < .001$, $\eta p^2 = .038$. This effect was qualified by a significant Category * Brand interaction, $F(1,510) = 21.33$, $p < .001$, $\eta p^2 = .040$ (Figure 4). The preference for generic products was strong in the pain relief category, where generics scored much higher than branded options (EMM = 4.48 vs. 3.57, a 0.91-point difference). In contrast, this generic advantage was much smaller in the cold and flu category, shrinking to just a 0.27-point difference (3.85 vs. 3.58). Meanwhile, the evaluation scores for the branded products remained almost exactly the same across both product categories. Neither Category * Price ($F(1, 510) = 1.19$, $p = .276$) nor Category * Source ($F(1,510) = 1.78$, $p = .182$) was significant.

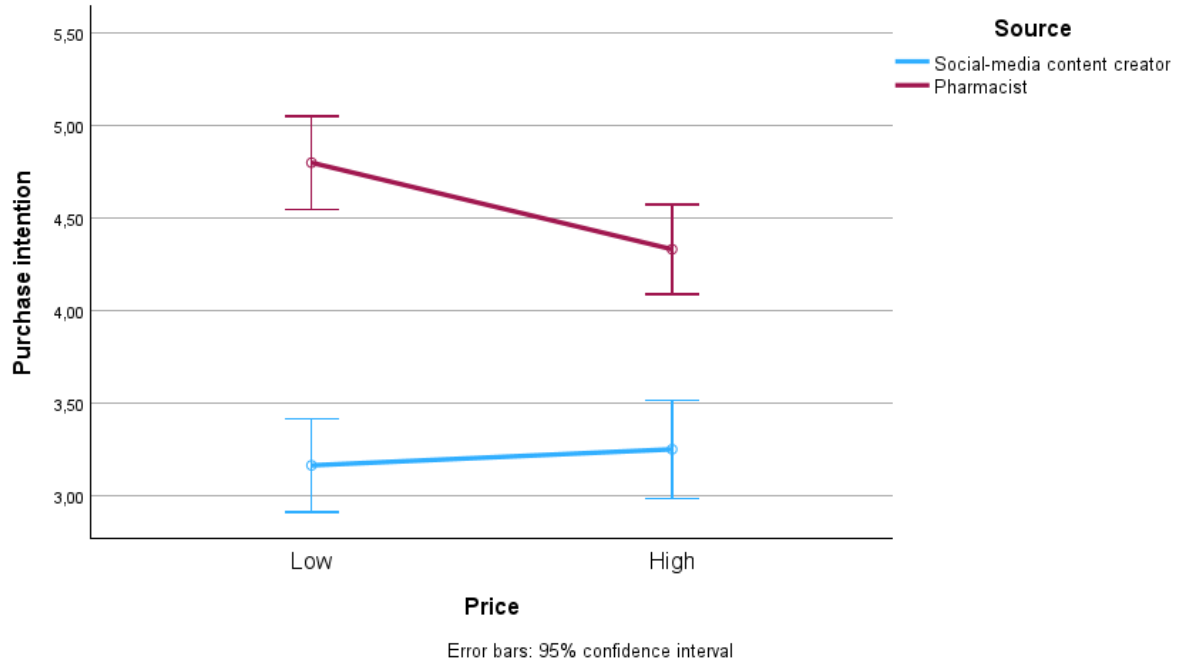
*Figure 4 - Category * Brand interaction*



Finally, one non-hypothesized between-subjects interaction emerged: Price * Source, $F(1,510) = 5.09$, $p = .024$, $\eta p^2 = .010$ (Figure 5). The high price reduced purchase intention only when the product was recommended by the pharmacist (EMM = 4.78 low vs. 4.27 high), whereas no price penalty appeared in the social-media content creator condition (3.18 vs. 3.25). Given its exploratory status and modest effect size, this finding is reported for completeness and interpreted with caution in the chapter 'Discussion'. The Brand * Source interaction was

marginal (F(1,510) = 3.01, p = .083) and all remaining interactions were non-significant (all p ≥ .40).

*Figure 5 - Price * Source interaction*



Mediation analyses

This section tests the two hypothesized psychological pathways. The source-credibility pathway (H5) was examined with a parallel multiple-mediator model (PROCESS Model 4) in which information source predicts overall purchase intention through perceived expertise and perceived trustworthiness entered simultaneously. All PROCESS models were estimated with 5,000 bootstrap resamples, 95% percentile confidence intervals, and HC3 heteroscedasticity-consistent standard errors. Given the high correlation between the two credibility dimensions (r = .84), a robustness model replacing the two parallel mediators with a single composite credibility score was estimated in addition.

Table 11 summarizes the parallel mediation results (N = 518). The source manipulation had a large effect on both credibility dimensions: relative to the content creator, the pharmacist was perceived as substantially more expert (a_1 = 2.83, SE = 0.12, t = 24.30, p < .001; R^2 = .54) and more trustworthy (a_2 = 2.15, SE = 0.13, t = 16.93, p < .001; R^2 = .36). With the source and both mediators entered simultaneously, perceived expertise (b_1 = 0.21, p = .007) and perceived trustworthiness (b_2 = 0.16, p = .023) each independently predicted purchase intention. Both specific indirect effects were significant: the source effect was transmitted through expertise

(a_1b_1 = 0.60, 95% BootCI [0.19, 1.04]) and through trustworthiness (a_2b_2 = 0.34, BootCI [0.06, 0.65]), jointly accounting for 0.94 of the 1.35 point total effect (approximately 70% of the source effect on purchase intention was thus mediated by credibility). The pairwise contrast between the two specific indirect effects was not significant (C_1 = 0.26, BootCI [−0.45, 0.95]) meaning that expertise and trustworthiness could not be statistically distinguished in their contribution, which is an unsurprising outcome given their high intercorrelation (r = .84). The residual direct effect remained small but significant (c′ = 0.41, p = .041), indicating partial mediation.

The pattern was consistent across different specifications. The single-composite credibility model showed an indirect effect of 0.92 (BootCI [0.65, 1.21]). The model was re-estimated with and without covariates. Adding balanced covariates (attitude towards generics, health literacy) left all focal paths essentially unchanged (indirect effects 0.61 and 0.32, both intervals excluding zero; c′ = 0.40, p = .045). Adding all four measured covariates, including treatment-contaminated brand loyalty and price consciousness, left all focal paths essentially unchanged as well (0.59 and 0.32; c′ = 0.33, p = .086). The only specification-sensitive parameter was the residual direct effect, which became almost unimportant when the post-treatment covariates were entered. This is consistent with the conditioning concern already discussed and with the conclusion that source credibility carries the bulk of the source effect. H5 is supported.

Table 11 - Parallel mediation results
Panel A. Model paths

Path	Symbol	b	SE	t	p	95% CI
Source → perceived expertise	a_1	2.83	0.12	24.30	< .001	[2.60, 3.06]
Source → perceived trustworthiness	a_2	2.15	0.13	16.93	< .001	[1.90, 2.40]
Perceived expertise → purchase intention	b_1	0.21	0.08	2.71	.007	[0.06, 0.37]
Perceived trustworthiness → purchase intention	b_2	0.16	0.07	2.29	.023	[0.02, 0.30]
Direct effect of source on purchase intention	c′	0.41	0.20	2.05	.041	[0.02, 0.80]
Total effect of source on purchase intention	c	1.35	0.13	10.48	< .001	[1.10, 1.61]

Panel B. Bootstrapped indirect effects

Mediation pathway	Effect	BootSE	95% CI
Via perceived expertise	0.60	0.22	[0.19, 1.04]
Via perceived trustworthiness	0.34	0.15	[0.06, 0.65]
Total indirect effect	0.94	0.16	[0.65, 1.27]
Contrast (expertise - trustworthiness)	0.26	0.35	[−0.45, 0.95]

Note. R^2 = .54 (perceived expertise), .36 (perceived trustworthiness), .26 (purchase intention)

The risk–value pathway (H4a/H4b) was examined with serial mediation models (PROCESS Model 6), estimated separately for each signal (brand and price) and each chain (signal → perceived quality → perceived value → intention, and signal → perceived risk → perceived value → intention), within each therapeutic category. The focal parameter in each model is the full serial indirect effect (a1 * d21 * b2) and its bootstrap confidence interval.

Table 12 reports the eight serial mediation estimations. Across all eight models, the internal psychological chain operated in the theorized direction in every model: perceived quality consistently enhanced perceived value (d_{21} = 0.47 to 0.52, all $p < .001$), perceived risk consistently eroded it (d_{21} = −0.43 to −0.54, all $p < .001$), and perceived value consistently translated into purchase intention (b = 0.36 to 0.57, all $p < .001$). However, the entry of the marketing signals into this chain was very different from what was predicted.

For the brand signal, significant serial mediation emerged but with the opposite sign to that hypothesized. In the pain category, the branded product was perceived as lower in quality than the generic (a_1 = −0.69, $p < .001$), yielding a negative serial indirect effect through quality and value (−0.12, 95% BootCI [−0.19, −0.07]). In the cold/flu category, this quality path vanished (a_1 = −0.12, not significant and serial effect −0.02, not significant), mirroring within the mechanism the Category * Brand interaction observed on the direct effects discussed earlier. The risk chain reversed even more consistently because branded products were perceived as riskier than generics in both categories (pain: a_1 = 0.72, $p < .001$ and cold/flu: a_1 = 0.30, p = .010), producing significant negative serial indirect effects through risk and value in both (pain: −0.21 [−0.31, −0.13] and cold/flu: −0.07 [−0.14, −0.02]). H4a is not supported for the brand signal. However, there was a significant serial mediation in the opposite direction. This could provide a mechanistic explanation of the reversed brand effect documented in the last section.

For the price signal, neither hypothesized inference operated: price affected neither perceived quality (pain: a_1 = 0.14 and cold/flu: a_1 = −0.08; both not significant) nor perceived risk (a_1 = 0.03 and 0.14, both not significant) and all four serial indirect effects were non-significant. H4b is thus not supported for the price signal.

Price nonetheless influenced the chain at a different entry point, for example, it directly reduced perceived value (e.g., pain quality model: −0.55, p < .001), and the simple indirect effect through value alone was significant in three of the four models (e.g., pain: −0.20 [−0.31, −0.11] and cold/flu: −0.08 [−0.16, −0.01]). The high price thus lowered purchase intention through the monetary-sacrifice component of perceived value rather than through quality or risk inferences (Zeithaml, 1988). One type of suppression pattern deserves special attention. In the pain risk model, once the risk and value pathways were controlled, a small positive direct effect of price appeared (c' = 0.24, p = .055). This suggests that a small positive price signal may exist along with, and be less important than, the sacrifice penalty.

Table 12 - Serial mediation of the brand and price effects through evaluation and perceived value, by therapeutic category

Signal	Chain	Category	a_1	d_{21}	b	Serial indirect effect [95% CI]	c′	c
Brand	Quality	Pain	−0.69***	0.51***	0.36***	**−0.12 [−0.19, −0.07]**	−0.39***	−1.01***
Brand	Quality	Cold/flu	−0.12	0.47***	0.37***	−0.02 [−0.07, 0.03]	−0.21*	−0.34*
Brand	Risk	Pain	0.72***	−0.54***	0.54***	**−0.21 [−0.31, −0.13]**	−0.48***	−1.01***
Brand	Risk	Cold/flu	0.30**	−0.43***	0.57***	**−0.07 [−0.14, −0.02]**	−0.12	−0.34*
Price	Quality	Pain	0.14	0.52***	0.37***	0.03 [−0.02, 0.08]	0.04	−0.04
Price	Quality	Cold/flu	−0.08	0.47***	0.37***	−0.01 [−0.06, 0.03]	−0.10	−0.25
Price	Risk	Pain	0.03	−0.54***	0.57***	−0.01 [−0.09, 0.06]	0.24	−0.04
Price	Risk	Cold/flu	0.14	−0.43***	0.57***	−0.04 [−0.09, 0.02]	−0.04	−0.25

Note. * p < .05, ** p < .01, *** p < .001.

a_1 = signal → first-stage mediator

d_{21} = first-stage mediator → perceived value

b = perceived value → purchase intention.

Robustness check : PROCESS Model 80

Because perceived quality and perceived risk were estimated separately in the main analysis, while Aufegger et al. (2021) included both mediators in the same model, an additional joint model was estimated as a robustness check. PROCESS Model 80 was used to include perceived quality and perceived risk as parallel first-stage mediators before perceived value. The model was estimated separately for brand and price and for each product category, resulting in four models. Table 13 compares the serial indirect effects from the separate and joint models. The conclusions for H4a and H4b were unchanged. The four price chains remained non-significant. Price still had a significant negative effect on perceived value in both categories ($b = -0.52$, $p < .001$ for pain; $b = -0.19$, $p = .046$ for cold/flu). The three significant reversed brand chains also remained significant, although their effects were smaller in the joint models. For example, the risk chain in the pain category decreased from −0.21 to −0.08. Overall, the results were therefore consistent across the two model specifications, and the conclusions for H4a and H4b did not change.

Table 13 - Robustness of the serial indirect effects: separate (Model 6) versus joint (Model 80) specifications

Signal	Chain	Category	Model 6	Model 80	Conclusion
Brand	Quality	Pain	−0.12 [−0.19, −0.07]	−0.08 [−0.13, −0.04]	sign. (reversed) unchanged
Brand	Quality	Cold/flu	−0.02 [−0.07, 0.03]	−0.02 [−0.05, 0.02]	ns unchanged
Brand	Risk	Pain	−0.21 [−0.31, −0.13]	−0.08 [−0.13, −0.04]	sign. (reversed) unchanged
Brand	Risk	Cold/flu	−0.07 [−0.14, −0.02]	−0.02 [−0.04, −0.003]	sign. (reversed) unchanged
Price	Quality	Pain	0.03 [−0.02, 0.08]	0.02 [−0.02, 0.05]	ns unchanged
Price	Quality	Cold/flu	−0.01 [−0.06, 0.03]	−0.01 [−0.05, 0.02]	ns unchanged

Price	Risk	Pain	−0.01 [−0.09, 0.06]	−0.003 [−0.03, 0.02]	ns unchanged
Price	Risk	Cold/flu	−0.04 [−0.09, 0.02]	−0.01 [−0.03, 0.01]	ns unchanged

Note.

Model 6 = each chain estimated separately (Table 12)

Model 80 = quality and risk entered as parallel first-stage mediators converging on perceived value.

Moderation analyses

H6a predicted that the serial mediation of the brand and price effects through quality, risk, and value would be stronger in the pain category than in the cold/flu category. For the brand signal, the evidence is consistent with stronger pain-category mediation: the Category * Brand interaction was significant on the total effects ($F(1,510) = 21.33$, $p < .001$, $\eta p^2 = .040$), the quality chain was significant in the pain category (−0.12 [−0.19, −0.07]) but not in the cold/flu category (−0.02, not significant), and the risk chain was substantially larger in pain (−0.21 [−0.31, −0.13]) than in cold/flu (−0.07 [−0.14, −0.02]). The bootstrap intervals of these two conditional effects overlap. This is not valid evidence of the difference between two estimates (Schenker & Gentleman, 2001). Also, the category moderator is within-subject. This means that no formal test of that difference is available in this design. So, the comparison is descriptive. One thing to keep in mind is that the amplified mediation is more of a generic advantage than a branded one. As predicted, the pain category strengthened the mechanism, but in the opposite direction that was established in the thesis. Therefore, H6a only gets some support for the brand signal, and only in certain situations. For the price signal, no serial mediation was found in either category (all four conditional serial effects were not significant), and Category * Price: $F(1,510) = 1.19$, $p = .276$ result shows that H6a is not supported for the price signal.

H6b predicted that the mediation of the source effect through source credibility (H5) would be significantly stronger in the pain category than in the cold/flu category. When it came to the direct effects, the interaction between Category * Source was not significant ($F(1, 510) = 1.78$, $p = .182$). This means that pharmacists had a similar advantage in both categories. The source was the same for both scenarios, so the credibility of the source didn't change. This meant that the first path (source → credibility) stayed the same for both scenarios. The only thing that could change was the second path (credibility → intention) and the effect it had on the outcome.

This structure makes it hard to imagine that strong category moderation of the credibility pathway is possible. Credibility is associated with the messenger, not the illness.

Re-estimating the parallel mediation model on each category's intention score showed very similar mediation: the total indirect effect of source through credibility was 0.93 [0.59, 1.29] in the pain category and 0.96 [0.63, 1.31] in the cold/flu category, almost the same point estimates, with mostly overlapping confidence intervals. As mentioned earlier, interval overlap does not formally prove that two things are the same. However, in this case, it aligns with the non-significant Category * Source interaction. This indicates that there was no evidence of the expected difference in mediation effects. The larger total source effect in the pain category (c = 1.47 vs. 1.23) was due to the residual direct effect (c' = 0.55, p = .018 in pain and c' = 0.27, p = .226 in cold/flu) rather than to the credibility pathway. There was a small change in the channel composition, the trustworthiness path was significant in the pain category (0.41 [0.10, 0.77]) but not in the cold/flu category (0.27 [−0.05, 0.61]) and without altering the total mediated share. This is consistent with the expectation and the non-significant Category * Source interaction. This means that H6b is not supported. Source credibility functions as a category-general asset. It does this by mediating the source effect to a comparable degree regardless of therapeutic category.

H7, exploratory and non-directional, was addressed in two steps. First, the mixed ANOVA was re-estimated with generation as a fourth between-subjects factor. Neither the main effect of generation ($F(1, 502) = 2.95$, $p = .087$, $\eta p^2 = .006$) nor its interactions with brand ($F(1, 502) = 0.01$, $p = .903$) or source ($F(1, 502) = 0.01$, $p = .922$) reached significance. All within-subject interactions involving Generation were not significant (all $p \geq .227$) meaning that the generic advantage, the pharmacist premium, and the category patterns are the same across groups. However, one interaction emerged, the Price * Generation, $F(1, 502) = 6.18$, $p = .013$, $\eta p^2 = .012$. The high-price penalty was only for Millennials (EMM = 4.03 low vs. 3.50 high), while Generation Z was not sensitive to price (3.93 vs. 4.03). So, the overall price effect discovered before is driven completely by the older group. A three-way Brand * Source * Generation interaction also reached significance ($F(1, 502) = 6.45$, $p = .011$, $\eta p^2 = .013$). The results of the estimated marginal means indicates that among Millennials the generic advantage was concentrated in the pharmacist condition (EMM difference = 1.09 points, vs. 0.03 in the social-media content creator condition), whereas among Generation Z it appeared under both sources (0.48 and 0.70 points). Additionally, the pharmacist's recommendation lifted the generic far more than the branded product among Millennials (source premium 1.87 vs. 0.81 points) but

operated more uniformly among Generation Z (1.25 vs. 1.47). This pattern converges with the generational divergence in persuasion channels reported below. Millennials seem to only accept the generic when they hear about it from an expert. On the other hand, Generation Z's preference for the generic is not influenced by the source. Given its modest effect size and exploratory status, it is noted descriptively and discussed in the chapter ‘Discussion’.

Second, the main mediation models were re-estimated separately within each generational subsample (n = 241 Generation Z; n = 277 Millennials; Table 14). The reversed brand mechanisms were the same in both groups: the serial quality chain (pain category) was significant for Generation Z (−0.07 [−0.15, −0.02]) and for Millennials (−0.17 [−0.28, −0.08]), as was the serial risk chain (−0.16 [−0.29, −0.07] and −0.26 [−0.41, −0.13], respectively), with overlapping intervals. Again, since overlap is not a significance test (Schenker & Gentleman, 2001) and the multi-group approach does not formally test for differences in indirect effects across groups, the apparent difference in their magnitudes is not interpreted. As a result, both groups are read as displaying the same reversed pathways. The credibility pathway, on the other hand, showed a big difference in how it was described. The total source effect was almost the same for both groups (1.38 vs. 1.32 scale points), but it went through different channels. For Generation Z, only the trustworthiness path predicted intention (b = 0.25, p = .009, specific indirect effect 0.49 [0.12, 0.90] and expertise path not significant) and a significant direct effect remained (c′ = 0.75, p = .017). For Millennials, only the expertise path predicted intention (b = 0.37, p < .001, specific indirect effect 1.06 [0.46, 1.62] and trustworthiness path not significant) and mediation was complete (c′ = 0.12, p = .617). The fact that Generation Z is more likely to be persuaded by trust while Millennials are more likely to be persuaded by expertise also explains why there is no significant difference between the two indirect effects as seen in the last chapter, as these opposite patterns cancel each other out when averaged together. Because of the exploratory multi-group design, the lack of a formal test of differences between the groups, and the high intercorrelation between the two credibility dimensions, this difference is reported as a descriptive finding that still needs to be confirmed rather than as an established moderation effect. Overall, H7 is partially supported: the price effect differed significantly across generations, whereas the brand and source effects did not. The contrasting credibility channels are reported as a descriptive pattern and do not contribute to this conclusion.

Table 14 - Main mediation models re-estimated separately within each generational Panel A.

Source → credibility → purchase intention (PROCESS Model 4)

Path	Generation Z (n = 241)	Millennials (n = 277)
a_1 Source → perceived expertise	2.77 (0.17), p < .001	2.87 (0.16), p < .001
a_2 Source → perceived trustworthiness	2.00 (0.19), p < .001	2.28 (0.17), p < .001
b_1 Perceived expertise → purchase intention	0.05 (0.11), p = .658	0.37 (0.10), p < .001
b_2 Perceived trustworthiness → purchase intention	0.25 (0.09), p = .009	0.06 (0.10), p = .529
Indirect via expertise	0.14 [−0.42, 0.80]	1.06 [0.46, 1.62]
Indirect via trustworthiness	0.49 [0.12, 0.90]	0.14 [−0.25, 0.62]
Total indirect effect	0.63 [0.20, 1.15]	1.20 [0.81, 1.60]
c′ Direct effect	0.75 (0.31), p = .017	0.12 (0.24), p = .617
c Total effect	1.38 (0.18), p < .001	1.32 (0.18), p < .001

Panel B.

Brand → evaluation → perceived value → purchase intention, pain scenario (PROCESS Model 6)

Path	Generation Z (n = 241)	Millennials (n = 277)
c Total effect of brand	−0.92 (0.24), p < .001	−1.06 (0.22), p < .001
Quality chain		
a_1 Brand → perceived quality	−0.59 (0.20), p = .003	−0.77 (0.17), p < .001
d_{21} Perceived quality → perceived value	0.48 (0.05), p < .001	0.54 (0.06), p < .001
b Perceived value → purchase intention	0.25 (0.08), p = .002	0.41 (0.08), p < .001
Serial indirect effect	−0.07 [−0.15, −0.02]	−0.17 [−0.28, −0.08]
Risk chain		
a_1 Brand → perceived risk	**0.67 (0.17), p < .001**	**0.78 (0.16), p < .001**

d_{21} Perceived risk → perceived value	**−0.47 (0.06), p < .001**	**−0.59 (0.06), p < .001**
b Perceived value → purchase intention	**0.52 (0.10), p < .001**	**0.56 (0.09), p < .001**
Serial indirect effect	**−0.16 [−0.29, −0.07]**	**−0.26 [−0.41, −0.13]**

DISCUSSION

Summary of results

First, the psychological processes described in the chapter ‘Conceptual Framework and Hypothesis Development’ matched the results. Every estimate showed that perceived quality increased perceived value, perceived risk decreased it, and perceived value increased the intention to purchase. At the same time, the credibility of the source through its expertise and trustworthiness affected about 70% of the source's effect on purchase intention. The evaluative and credibility pathways responded differently to the same moderator, as the parallel-mediation architecture predicted.

Second, the signals from the market entered this chain in ways that were very different from what classical signaling predictions said they would be. The brand signal reversed due to the fact that the generic alternative made people more likely to buy it than the fictional branded product (H1 not supported), because the unfamiliar brand was seen as lower in quality (pain category) and riskier (both categories) than a generic whose packaging clearly shows its active molecule (H4a not supported because of the significant serial mediation in the reversed direction). The price signal did not lead to any changes in quality or risk (H2 and the price components of H4 were not supported). It only affected the monetary-sacrifice part of perceived value, and its penalty was only seen when a pharmacist recommended it and only among Millennials.

Finally, the information source had the largest effect in the study: the pharmacist did better than the social-media content creator by more than 1.3 scale points (H3 strongly supported), an advantage supported by credibility (H5 supported) and didn’t differ significantly across different types of categories (H6b not supported), across generations in size, and robust to every other setting. The moderation analyses did not change this picture. The therapeutic category influenced the product-signal mechanism, but it did not influence the source mechanism (H6a was partially supported for brand, in the opposite direction because it was not supported for price). The generational comparison showed that an identical pharmacist premium affects different psychological processes (expertise among Millennials and trustworthiness among Generation Z (H7 was partially supported)).

Table 15 - Summary of results

Hypothesis	Main result	Conclusion
H1 Brand: branded > generic	Generic > branded; $F(1, 510) = 21.90$, $p < .001$, $\eta p^2 = .041$	Not supported Significant reversal
H2 Price: high > low	No significant price effect; $F(1, 510) = 3.10$, $p = .079$	Not supported
H3 Source: pharmacist > content creator	Strong pharmacist advantage; $F(1, 510) = 108.34$, $p < .001$, $\eta p^2 = .175$	Supported
H4a Brand → quality/risk → value → PI	Significant serial mediation in the opposite direction, mainly for pain	Not supported Reversed mediation
H4b Price → quality/risk → value → PI	No significant serial indirect effects	Not supported
H5 Source → credibility → PI	Indirect effects via expertise (.60) and trustworthiness (.34); ~70% mediated	Supported
H6a H4 stronger for pain	Brand pathway differed by category; price pathway did not	Partial evidence Brand only and reversed
H6b H5 stronger for pain	Similar indirect effects for pain (.93) and cold/flu (.96); $p = .182$	Not supported
H7 Generational differences	Price effect differed by generation; credibility pathways showed different descriptive patterns	Exploratory evidence only

Comparison with the Existing Literature

The reversed brand effect and the boundary conditions of signaling theory

At first sight, this seems to go against a lot of research on brand signals. This research, which started with Dodds et al.'s work in 1991, showed that brand names can make people think a product is better. It also showed that brand names can make people trust a product. This idea was later explained more in a study by Erdem and Swait in 1998. However, if read more carefully, the finding does not disprove the existing literature. Instead, it reveals a boundary condition. Signaling theory presupposes that the brand has accumulated credibility capital through consistent past investment and it is this accumulated capital, not the mere presence of a name, that reduces perceived risk and information costs (Spence, 1973; Erdem & Swait, 1998). The fictional brands employed here, methodologically necessary to isolate the brand

construct from its familiarity (chapter ‘Methodology’), possessed no such capital. Without brand equity, the brand name was seen as something unfamiliar, even though several well-known brand elements had been incorporated into the packaging and names (colors, symbols, sound, etc.). Therefore, respondents perceived Algidyne and Rhinocaps as riskier than generic products because the packaging of the generics clearly shows the active ingredient, like paracetamol, which most respondents already know. In Mitchell's (1999) terms, the generic made it easier for consumers to get information, while the unknown brand made it harder. The mechanism data support this interpretation. The brand penalty was driven by higher perceived risk and lower perceived quality. This is the same process that is expected for well-known brands. The signal's structure is still there, but whether the signal is positive or negative depends on the brand equity behind it.

Two elements documented in this study reinforce the interpretation. The sample had positive attitudes towards generic drugs (M = 2.52 on the 7-point scale where higher scores indicate a more negative attitude), which is in line with the Swiss generational and policy context discussed in the chapter ‘Literature review’. In addition, because price and brand were manipulated independently, the branded product did not offer any price advantage. From the consumer's point of view, an unfamiliar brand sold at the same price as a generic product is therefore a less attractive option. Finally, the interaction Category * Brand is consistent with risk theory (Stone & Grønhaug, 1993; Kahneman & Tversky, 1979). In the cold and flu category, where perceived risk was generally higher potentially because it involved a combination product containing pseudoephedrine, the preference for the generic product was weaker and moved closer to the branded product. This would suggest that when consumers perceive more risk, the advantage of the generic product becomes smaller, even if it does not disappear completely.

The price effect: Aufegger replicated, the price–quality heuristic absent

H2 tried to show that Aufegger et al.'s (2021) surprising finding was wrong. It was done by betting that in the Swiss premium context, a high price would mean quality. This bet was not confirmed, and the results replicated the pattern found by Aufegger in a different country, sample, and product category. If anything, respondents tended to prefer the cheaper option. More importantly, the mechanism showed that price did not affect perceived quality or perceived risk in any of the four models. However, it did directly reduce perceived value. According to Zeithaml (1988), price only acted as the monetary cost for consumers and not as a sign of quality, unlike what has been found in other studies like Dodds et al., 1991. For young

and informed consumers evaluating a familiar active ingredient, price no longer seemed to signal product quality because there was little uncertainty about the quality to begin with. The two conditional results provide a clearer picture. The negative effect of the higher price was only found when the product was recommended by a pharmacist. One possible reason for this is that the pharmacist's recommendation made people more confident in the product's quality. This made them more likely to think about the price when making their decision. When a product was recommended by an influencer, the recommendation may have been less convincing, so the price was less important to them. This effect was only seen among Millennials. Generation Z was not affected by price in this category. This confirms what was mentioned in the 'Literature Review': Millennials are more sensitive to prices. For Generation Z, price is not the main factor when buying low-cost healthcare products. Instead, trust (in a pharmacist or an influencer) seems to play a much bigger role in their decisions, as discussed below.

The source effect: professional credibility outclasses social-media content creator in the health domain

The 1.3-point advantage for the pharmacist was the biggest effect observed. This applies the source-credibility theory (Hovland & Weiss, 1951; Ohanian, 1990) to the Swiss OTC market and provides an interesting contrast with the digital influencer/eWOM literature. Djafarova and Rushworth (2017) showed the persuasive power of relatable digital influencers for young consumers in lifestyle topics. However, the data show that this power does not completely transfer to medication choices. Health is a field where decisions are really important and rely on expertise. Kahneman and Tversky's (1979) loss asymmetry is involved in every bad medication choice, and the established credibility of the Swiss pharmacist profession (see the ‘Literature review’ chapter) is perfectly adapted to these kinds of decisions.

The mediation analysis explains how this works: about 70% of the source effect came from credibility. Both dimensions played a role without one being statistically stronger than the other. This matches the dual-route persuasion model, where the expert source provides both strong arguments (central route) and trust signals (peripheral route) at the same time (Petty & Cacioppo, 1986). Using Kotler et al.'s (2016) 5A framework from the ‘Literature review’ chapter, the pharmacist solves the "Ask" stage in just one interaction. The almost complete mediation observed among Millennials shows this perfectly. One time-related detail is worth mentioning because the "expert premium" dropped from 1.73 to 0.97 points between the first and second exposure, while the social-media content creator evaluations went up. This may

suggest that part of the expert's advantage depends on novelty, and that seeing an influencer multiple times might make their format feel more normal.

Selective category moderation and the independence of the two pathways

Dholakia's (2001) motivational model predicts that situational involvement affects how consumers process product information. The results observed here support this prediction, but only in certain cases, and this selectivity is interesting in itself. The therapeutic category influenced the product-signal mechanism (the connection between the brand, perceived quality, and risk was stronger in the pain category). However, it did not really change the total mediation of the source's credibility (0.93 vs. 0.96 across categories).

Therefore, the involvement related to a specific illness changes how consumers evaluate the product itself, but not how they judge the person recommending it. The credibility of the messenger acts as a general advantage across all categories. This difference provides clear evidence that the two pathways described in the 'Conceptual Framework and Hypothesis Development' chapter are truly independent.

Generational findings: two persuasion cultures under one behavioral surface

The 'Conceptual Framework and Hypothesis Development' chapter presented two different predictions regarding generations. H7 asked whether the effects differ between generations, without predicting a direction. At the level of the total effect they did not: the pharmacist advantage reached 1.38 points among Generation Z and 1.32 among Millennials. What differed was the composition of that effect. Among Generation Z, trustworthiness was associated with purchase intention while expertise was not and among Millennials the pattern was reversed. Credibility also accounted for a much larger share of the source effect among Millennials (1.20 of 1.32) than among Generation Z (0.63 of 1.38). These coefficients were not compared across groups with a formal test. Furthermore, full mediation was only observed among Millennials. The three-way interaction shows a similar pattern for the direct effects: Millennials preferred the generic product only when it was recommended by an expert, while Generation Z preferred the generic product regardless of the source. Combined with Generation Z's lack of response to price, this suggests that their choices were less dependent on the source and price manipulations. In this group, other factors may therefore play a more important role in shaping OTC product choice. Contrary to the credibility-gate mechanism described by Jia and Li (2024), credibility accounted for a smaller share of the source effect among Generation Z than among Millennials.

However, since this multi-group comparison was exploratory, further research is needed to confirm these findings.

Theoretical implications

First, the thesis identifies a condition for the brand-signaling theory. A brand signal is not always positive; it depends on the credibility the brand has built. Without this credibility, an unknown brand name actually increases the perceived risk. This expands Erdem and Swait's (1998) framework by providing empirical proof for the "zero-equity" part of their model. It shows exactly how this works through a reversed serial mediation (via quality and risk), rather than just noting it as an unexpected result.

Second, the different moderation patterns are consistent with two partly distinct pathways. Both the risk-value chain and the credibility pathway were found to influence respondents' responses, but they reacted differently to the same moderator. More specifically, category involvement influenced the first pathway but not the second. This is exactly what should happen if the two routes are structurally independent, as proposed by the ELM-based framework in the 'Conceptual Framework and Hypothesis Development' chapter (Petty et al., 1997). The fact that moderation only occurred for one pathway provides stronger evidence of their separation than simply finding that both pathways are significant.

Third, the results "refine" the role of price in low-involvement healthcare products. Price was only seen as a financial sacrifice, without influencing perceived quality or risk. For products based on well-known molecules (like paracetamol) and used by informed consumers, the classic idea that a higher price means better quality does not seem to apply. This specific context should be considered in future research on signaling.

Finally, the exploratory generational analyses suggest that expertise and trustworthiness may not have the same importance across age groups. Expertise was significant among Millennials, while trustworthiness was significant among Generation Z. However, the difference between these indirect effects was not formally tested. These results therefore provide an interesting direction for future research rather than evidence that the source credibility model differs between generations.

Managerial implications

For pharmacy retailers such as the Galenica network, the clearest implication concerns the pharmacist. The recommendation source produced the largest effect on purchase intention of

all manipulated factors: the pharmacist condition scored 1.3 points higher than the social-media content creator on the seven-point scale, more than twice the brand gap, and it accounted for by far the largest share of explained variance ($\eta p^2 = .18$, against .04 for brand and a non-significant price effect). This advantage did not differ significantly across therapeutic categories or generations. Investing in counter-level advice, staff training, and visible professional credentials therefore appears well founded. The size of the source effect relative to the product signals also suggests that protocols guaranteeing a personal recommendation at every OTC interaction would carry substantial persuasive value, although the present design does not allow the returns of the two types of investment to be compared. For physical pharmacies competing with online-only players, the recommendation is best treated as part of the offer rather than as an accessory to the sale.

Regarding assortment and private-label strategy, the results support a transparent approach to generic products targeting Millennials and Generation Z. The advantage of generic products in this thesis did not depend on a lower price, as it was still observed when prices were equal. Instead, the findings suggest that it was linked to the clear presentation of the active ingredient on the packaging. Generic and private-label products targeting these groups should therefore clearly display the active ingredient, dosage, and indication rather than trying to imitate the packaging of established brands. However, there is a difference between the two segments. Millennials adopt generic products when an expert recommends them. Thus, generic substitution programs in pharmacies will be most effective for this group if the pharmacist makes an explicit recommendation. On the other hand, Generation Z accepts generics regardless of the source, which allows the use of simpler sales channels to reach them.

These findings also serve as a clear warning for launching new brands. The reversed brand effect shows that a brand name that is not familiar to people is not a neutral element when there is no established brand equity. Instead, it can make people think there is more risk. People might not buy a product if they don't know the brand or if the price is too high. For new products entering the market, it suggests that building familiarity with the product should come before trying to make it seem high-quality. Sampling, professional recommendations, and strong visibility at the pharmacy counter could help consumers become more familiar with the product and build trust. The brand can become a positive signal only once some level of familiarity and credibility has been established.

For pricing, the results suggest using strategies adapted to each segment and sales channel. Price promotions are effective for Millennials, especially when a pharmacist is involved. On the other hand, Generation Z responds better to factors other than price. Furthermore, since consumers do not link price to quality in this category, a premium price cannot be used as a signal of high quality. Therefore, a high price must be justified by clear, tangible benefits that are well communicated to the customer. Otherwise, it is only perceived as a financial sacrifice.

Finally, regarding digital and influencer strategies, the results suggest a realistic approach rather than giving up on them completely. A single exposure to an influencer has little persuasive power when it comes to medication. However, a single exposure is unlikely to be decisive on its own, and whether familiarity with a digital source builds credibility over time remains an open question for repeated-exposure designs. Additionally, it seems that Generation Z reacts to signs of trust. This suggests that long-term and authentic content could still be useful for this group. Brands should think about how trustworthy they think influencers are when choosing them. They shouldn't just focus on how much medical expertise they claim to have. This type of content can help raise awareness about medicines before consumers go to a pharmacy, as long as it follows Swiss rules for advertising OTC medicines. One possible way to do this is to start with digital channels that create initial awareness and interest. Then, at the point of purchase, a pharmacist can provide more reassurance.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Limitations of the research

The conclusions presented above must be interpreted within the limits of the chosen methodology. Seven main limitations should be explicitly acknowledged. Each of them represents a deliberate methodological choice that influenced the final results.

Fictional brands and the external validity of the brand effect

To separate the effect of the brand from familiarity, advertising exposure, and previous experience with the product, this study used fictional brands (‘Methodology’ chapter). This choice improved the internal validity of the experiment, but it also has an important limitation. The negative brand effect found in this study only applies to brands with no existing brand equity, not to well-known national brands that are commonly sold in Swiss pharmacies. Therefore, the results cannot show whether a familiar brand with a long history and strong consumer trust would produce the same effect. As discussed in the ‘Discussion’ chapter, brand signals only work when they are supported by brand equity, suggesting that the results would probably be different for established brands. For this reason, the findings should mainly be generalized to new or unfamiliar brands rather than to the branded market as a whole. A similar but less serious limitation applies to the price factor. Each price condition was tested using a single price point per category (CHF 7.90 vs. CHF 2.50 for the pain product, and CHF 21.50 vs. CHF 16.50 for the cold and flu product). Consequently, the lack of a price effect is only proven for these specific amounts, rather than across a full range of prices. The same constraint applies to how the information sources were presented. The study used simulated formats, namely a written scenario (with stimuli) for the pharmacist and a fake social media shooting post for the influencer, instead of actual interactions.

Post-treatment manipulation checks

Both manipulation checks were administered after the two scenario evaluations. Therefore, they measured recall as much as initial perception. The high failure rate for the brand check (29.4%) for example is probably due to this timing, as well as the discreet manufacturer name (Helvex) legally printed on the generic packaging. The chosen exclusion rule removed only the respondents who failed both checks. This choice was made specifically to avoid conditioning the sample on a post-treatment variable (Montgomery et al., 2018). Furthermore, the results showed that the manipulations were still perceived well above chance. Administering the checks immediately after the exposure would have provided clearer evidence. However, this

would have revealed the true purpose of the study to the participants. As a result, it would have biased their answers, which the research design strictly aimed to avoid.

Post-treatment measurement control variables

Control variables were measured after the scenarios to avoid priming participants before the experiment. However, the results showed that two (brand loyalty and price consciousness) of the four control variables were influenced by the experimental treatments. For example, respondents who were exposed to generic products reported lower brand loyalty. Because these variables were affected by the treatment, they could not be included as covariates in the main models without introducing bias into the estimated effects (Montgomery et al., 2018).

The main analyses were nevertheless repeated using two different specifications: one including only the two unaffected covariates (attitude towards generic drugs and health literacy) and another including all four covariates. The results were consistent across both models. The only difference was the direct effect of the source, which became only slightly significant when the covariates affected by the treatment were included. This result shows the potential bias that can occur when post-treatment variables are included in the analysis. It also shows a problem with measuring traits after people have been exposed to the experimental conditions.

Separate versus joint estimation of the mediating chains

The quality chain and the risk chain were estimated in separate models, as planned. However, Aufegger et al. (2021) used a single model for both mediators. The two mediators are negatively correlated, meaning they are inversely related. This means that the separate estimates capture some of the same information and should not be added together. A supplementary joint specification (PROCESS Model 80), reported in the results chapter, confirmed every conclusion: all four price chains remained non-significant, and the three significant reversed brand chains kept their sign and their significance, but with smaller numbers like the pain-category risk chain, for instance, fell from −0.21 to −0.08. The results of H4a and H4b won't change based on this choice, but the numbers reported in the main analyses should be read as upper limits instead of exact estimates of each chain's unique contribution.

Within-subject category and the mediation of its moderation

Each respondent evaluated both therapeutic categories. This increased the statistical power of the study and made it possible to compare the two categories within the same individual. However, this design also introduced two important limitations.

First, a position effect was observed. The positive effect of the pharmacist recommendation became weaker when it appeared in the second scenario. Randomization reduced this effect in the overall results, but apparently it did not completely eliminate it.

Second, because the product category was within-subject moderator, a standard way to formally test whether the indirect effects were different between categories was not available. To address this limitation, the study used two different methods. ANOVA interaction terms were used to test whether the direct effects differed across categories. Then, separate mediation analyses were conducted for each therapeutic category. This approach is appropriate but does not provide a formal test of the differences between the conditional indirect effects. Instead, these comparisons are based on point estimates and bootstrap confidence intervals. Such comparisons are more conservative and should be interpreted as descriptive rather than as formal significance tests. For this reason, no claim of a significant difference between the indirect effects is made in the dedicated chapter.

Future research could address this limitation by using specific tools designed for within-participant analyses, such as MEMORE developed by Montoya and Hayes (2017).

Finally, expertise and trustworthiness were highly correlated (r = .84), making it more difficult to clearly distinguish the two credibility dimensions.

Sample composition

Participants were invited through the customer database of a pharmacy chain (Amavita), which made it possible to efficiently reach the target age groups. However, this recruitment strategy also means that participants were already customers of the pharmacy channel. As a result, the positive effect of the pharmacist recommendation may be stronger than it would be in the general population. In addition, women represented 66.5% of the sample. Although this is consistent with the profile of OTC medicine purchasers reported by Maes et al. (2019), it still represents an imbalance in the sample. Finally, the study only included participants from the French- and German-speaking regions of Switzerland.

Intentions, hypothetical stakes, and exploratory findings

The dependent variable measured purchase intention in hypothetical scenarios without any real financial consequences. So, the intention–behavior gap (Ajzen, 1991) should be

considered when interpreting the results, and the observed effect sizes should not be interpreted as predictions.

Finally, some of the most interesting findings of this study emerged from exploratory analyses. These include the interaction between price and source, the three-way interaction involving generation, and the different credibility pathways observed for Millennials and Generation Z. These analyses were not based on directional hypotheses and, for the comparisons of indirect effects between generations, no formal cross-group mediation test was performed. Therefore, these findings should be considered exploratory and interpreted with caution. They provide useful directions for future research but should be confirmed by independent studies before firm conclusions can be drawn.

Directions for future research

The limitations of this study also highlight several directions for future research.

First, future studies should examine the conditions under which the reversed brand effect occurs. One way to do this would be to replicate the experiment using three different types of brands: a well-known national brand, an unfamiliar brand, and a generic product. Ideally, this could also be combined with different price levels. Based on the results of this study, it is expected that the well-known brand would regain the positive brand effect usually reported in the literature, while the unfamiliar brand would continue to show the negative effect observed here. This would help determine more precisely under which conditions brand equity changes consumer perceptions.

Second, future research should formally test the mediation mechanisms identified in this study. The MEMORE framework developed by Montoya and Hayes (2017) would allow researchers to formally test moderated mediation for the therapeutic categories, something that was not possible with the current design. In addition, future studies could use a pre-registered moderated mediation design in which generation is directly included as a moderator instead of comparing separate subsamples. This would make it possible to determine whether the different roles of expertise and trust found for Millennials and Generation Z represent a stable difference between generations or are mainly due to the strong correlation between the two credibility dimensions. Qualitative research could also help explain how Generation Z develops trust in health information sources and provide a better theoretical understanding of these results.

Third, future studies should move beyond purchase intentions and examine actual consumer behavior. This could be done through incentive-compatible choice experiments, field experiments in pharmacies using different recommendation scripts, or analyses of sales data following pharmacist recommendations. The positive effect of pharmacist recommendations observed in this study suggests that such field studies would be worthwhile. However, it remains important to determine whether this effect also translates into real purchasing behavior.

Fourth, future research could investigate different types of influencers in more detail. The present study only examined one mid-level lifestyle influencer. Future studies could compare health influencers with lifestyle influencers, small and large influencers, sponsored and non-sponsored content, or video-based and image-based formats. This would help identify the conditions under which digital sources become as credible as pharmacists. In addition, the results suggest that repeated exposure may influence how consumers react to different recommendation sources. Since the positive effect of pharmacist recommendations became weaker during the second scenario while responses to social-media content creator became more positive, repeated-exposure studies could provide a better understanding of these changes over time.

Finally, future research should examine whether these findings can be generalized to other contexts. This includes the Italian-speaking region of Switzerland (or even other European countries with different policies regarding generic substitution) and additional OTC product categories involving less familiar active ingredients. These situations would provide a more demanding test of the transparency advantage observed for generic products in the present study.

Overall, this Master thesis provides a first step toward a better understanding of consumer responses to OTC products in Switzerland. It identifies the main mechanisms underlying these decisions, highlights the conditions under which brand signals become effective, and shows that, at least in the current context, recommendations from a credible healthcare professional remain one of the strongest influences on consumers' purchase intentions.

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APPENDICES

Appendix 1 – Summary table of hypothesis

Table 16 - Summary table of hypothesis

Hypothesis	Tested relationship	Expected pattern
H1	Brand → purchase intention	Branded > generic
H2	Price → purchase intention	High > low
H3	Source → purchase intention	Pharmacist > content creator
H4a	Brand → quality/risk → value → intention	Significant indirect effects
H4b	Price → quality/risk → value → intention	Significant indirect effects
H5	Source → credibility → intention	Significant mediation
H6a	Category moderates H4	Stronger for pain
H6b	Category moderates H5	Stronger for pain
H7	Generation moderates H1–H5	Exploratory

Appendix 2 – Summary table of price manipulation

Table 17 - Summary table of price manipulation

Product category	**Low price**	**High Price**
Pain (paracetamol 500 mg, 20 tablets)	CHF 2.50	CHF 7.90
Cold/flu (paracetamol + pseudoephedrine, 12 sachets)	CHF 16.50	CHF 21.50

Note. Price levels were benchmarked against Swiss pharmacy and market prices (Berger (2024), Amavita, Sun Store, Pharmacie Moudonnoise, Compendium, and comparable branded/generic products; see Webography)

Appendix 3 – Summary of source manipulation

Table 18 - Summary of source manipulation

Condition	Presentation	Primary cue
Pharmacist	Pharmacy setting; FPH-qualified pharmacist	Professional expertise

Social-media content creator	Instagram-style content; ~50k followers	Digital/social influence

Appendix 4 – Experimental visual stimuli

DE

Figure 6 - Experimental visual stimuli


PARACETAMOL + PSEUDOEPHEDRIN
16.50 CHF
PARACETAMOL
2.50 CHF
RHINOCAPS
21.50 CHF
ALGIDYNE
7.90 CHF
RHINOCAPS
21.50 CHF
ALGIDYNE
7.90 CHF
RHINOCAPS
16.50 CHF
ALGIDYNE
2.50 CHF

FR


RHINOCAPS
16.50 CHF
ALGIDYNE
2.50 CHF
RHINOCAPS
16.50 CHF
ALGIDYNE
2.50 CHF
PARACETAMOL + PSEUDOEPHEDRINE
21.50 CHF
PARACETAMOL
7.90 CHF
PARACETAMOL + PSEUDOEPHEDRINE
21.50 CHF
PARACETAMOL
7.90 CHF

Appendix 5 – Purchase Intention

Table 19 - Purchase Intention items

Code	Item (translated from Aufegger et al. 2021 replication of Dodds et al. 1991)
PI1	"If I were shopping for an OTC product, the likelihood that I would purchase this brand is high."
PI2	"The probability that I would consider buying this brand is high."
PI3	"My willingness to buy this brand is high."
PI4	"If I needed this type of medication, I would purchase this brand."

Appendix 6 – Perceived Quality

Table 20 - Perceived Quality items

Code	Final item	Adaptation
PQ1	"The quality of this drug appears to be high."	Product → drug
PQ2	"This drug appears to be reliable."	Product → drug
PQ3	"This drug appears to have good therapeutic efficacy."	Quality → therapeutic efficacy

Note. Adapted from Dodds et al. (1991), following Aufegger et al. (2021). PQ3 uses therapeutic efficacy to contextualize quality in the pharmaceutical setting (Williams et al., 2016).

Appendix 7 – Performance Risk

Table 21 - Performance Risk items

Code	Final item
PR_perf_1	"Considering the purchase of this drug, I worry about whether it will really perform as well as it is supposed to."
PR_perf_2	"If I were to purchase this drug, I would be concerned that it will not provide the level of benefits that I would be expecting."
PR_perf_3	"The thought of purchasing this drug causes me to be concerned about how dependable and reliable this product will be."

Note. Contextualized from Stone and Grønhaug (1993) to OTC medicines, following Aufegger et al. (2021)

Appendix 8 – Physical Risk

Table 22 - Physical Risk items

Code	Final item
PR_phys_1	"One concern I have about taking this drug is that it could cause adverse side effects."
PR_phys_2	"Taking this drug could lead to uncomfortable physical reactions such as nausea, drowsiness, or other adverse effects."
PR_phys_3	"Because this drug may not be completely safe, when I consider purchasing it, I become concerned about the potential physical risks associated with this product."

Note. Adapted from Stone and Grønhaug (1993) using pharmaceutical-specific physical-risk terminology.

Appendix 9 – Financial Risk

Table 23 - Financial Risk items

Code	Final item
PR_fin_1	"Purchasing this drug would be a bad way to spend my money."
PR_fin_2	"If I bought this drug, I would be concerned that the financial investment would not be wise."
PR_fin_3	"If I bought this drug, I would be concerned that I would not get my money's worth from it."

Note. Contextualized from Stone and Grønhaug (1993).

Appendix 10 – Perceived Value

Table 24 - Perceived Value items

Code	Item
PV1	"This drug is a good buy for the price."
PV2	"This drug offers good value for money."
PV3	"At the given price, this drug is worth the purchase."
PV4	"The price of this drug is acceptable given what it offers."
PV5	"This drug provides good benefits relative to its cost."

Note. Adapted from Dodds et al. (1991) and Zeithaml (1988), following Aufegger et al. (2021).

Appendix 11 – Source Credibility

Table 25 - Source Credibility items

Code	Dimension	Item (semantic differential, 1–7)
SC_exp_1	Expertise	"Not an expert" (1) — "Expert" (7)
SC_exp_2	Expertise	"Inexperienced" (1) — "Experienced" (7)
SC_exp_3	Expertise	"Unknowledgeable" (1) — "Knowledgeable" (7)
SC_exp_4	Expertise	"Unqualified" (1) — "Qualified" (7)
SC_exp_5	Expertise	"Unskilled" (1) — "Skilled" (7)
SC_trust_1	Trustworthiness	"Undependable" (1) — "Dependable" (7)
SC_trust_2	Trustworthiness	"Dishonest" (1) — "Honest" (7)
SC_trust_3	Trustworthiness	"Unreliable" (1) — "Reliable" (7)
SC_trust_4	Trustworthiness	"Insincere" (1) — "Sincere" (7)
SC_trust_5	Trustworthiness	"Untrustworthy" (1) — "Trustworthy" (7)

Appendix 12 – Brand Loyalty

Table 26 - Brand Loyalty items

Code	Item (from Lodorfos et al. 2006, OTC context)
BL1	"I prefer to purchase a brand of pharmaceutical product that I have previously purchased."
BL2	"I am loyal to the brands I have had a good experience with."

BL3	"I always buy the same brand of pharmaceutical product."
BL4	"I am loyal to the pharmaceutical brand names that I trust."
BL5	"I am prepared to pay more for a pharmaceutical product that I have had a good experience with."
BL6	"I would only recommend to a friend the brands that I am loyal to."
BL7	"I would switch to a different brand if a cheaper alternative was available."
BL8	"I would choose a different brand to my usual one if I could not find it in the first shop I visited."

Appendix 13 – Price Consciousness

Table 27 - Price Consciousness items

Code	Item	Source
PC1	"Price is the most important factor when I am choosing a brand."	Sinha & Batra (1999)
PC2	"I will buy whichever pharmaceutical brand is cheapest."	Lodorfos et al. (2006)
PC3	"I am a price-sensitive customer."	Lodorfos et al. (2006)
PC4	"I will search for the cheapest brand of pharmaceutical product."	Lodorfos et al. (2006)
PC5	"The money saved by purchasing generics is important to me."	Lichtenstein et al. (1993), adapted
PC6	"I compare prices of different brands before purchasing a medication."	Lichtenstein et al. (1993), adapted
PC7	"For this type of product, price is not important to me."	Lichtenstein et al. (1993), adapted
PC8	"The higher the price, the higher the quality of the product."	Aufegger et al. (2021)

Note. PC7 was reverse-coded.

Appendix 14 – Attitude towards generics

Table 28 - Attitude towards generics items

Code	Item	Source and adaptation

AG1	"I don't like the thought of generic medications."	Håkonsen et al. (2009), translated from Aufegger (2021)
AG2	"Generic medications are often associated with more side-effects than brand-name drugs."	Håkonsen et al. (2009), translated from Aufegger (2021)
AG3	"Generic medications are less effective than brand-name medications."	ATTOGEN-inspired, drug quality dimension (Domeyer et al., 2017)
AG4	"I trust generic medications as much as brand-name medications."	Adapted from ATTOGEN trust scale (Domeyer et al., 2017)
AG5	"Buying generic medications is a smart financial decision."	Adapted by Aufegger et al.(2021) from Halme et al. 2009

Note. AG4 and AG5 were reverse-coded when computing the negative-attitude composite

Appendix 15 – Health literacy

Table 29 - Health literacy items

Code	Item
	On a scale from very easy to very difficult, how easy would you say it is to…
HL1	…find information on treatments of illnesses that concern you?"
HL2	…to understand what your doctor or pharmacist says to you?"
HL3	…to judge when you may need to get a second opinion from another doctor or pharmacist?"
HL4	…to follow instructions from your doctor or pharmacist?"
HL5	…to judge whether the information on health risks in the media is reliable?"
HL6	…to decide how you can protect yourself from illness based on information in the media?"

Note. HLS-EU-Q6; 4-point response format.

Appendix 16 – Demographics

Table 30 - Demographic questions

Code	Variable	Format	Source of convention
D1	Age	Asked at the beginning, if the answer is invalid, the respondent is excluded from the survey	Standard

D2	Sex	3 categories: female / male / other-prefer not to say	Swiss federal census convention
D3	Education level	6 categories: compulsory / apprenticeship / high school / bachelor / master / doctorate	ISCED 2011 classification (FSO, 2015)
D4	Monthly net income	7 brackets: <3,000 / 3,000-4,500 / 4,500-6,000 / 6,000-8,000 / 8,000-12,000 / >12,000 / prefer not to say (CHF)	Swiss federal income distribution quintiles
D5	Canton of residence	Drop-down: 26 Swiss cantons	Swiss federal convention
D6	Primary language of response	4 categories: French / German / Italian / other	Swiss linguistic regions (FSO)
D7	OTC Customer	Have you purchased a product at a pharmacy in the last 12 months? Asked at the beginning, if the answer is invalid, the respondent is excluded from the survey	Standard

Appendix 17 – Complete measurement summary table

Table 31 - Complete measurement summary table

Construct	# items	Response	Source
Purchase intention (DV)	4	Likert 1–7	Adapted from Dodds et al. (1991), following Aufegger et al. (2021).
Perceived quality	3	Likert 1–7	Adapted from Dodds et al. (1991), following Aufegger et al. (2021).
Performance risk	3	Likert 1–7	Stone and Grønhaug (1993)
Physical risk	3	Likert 1–7	Stone and Grønhaug (1993)
Financial risk	3	Likert 1–7	Stone and Grønhaug (1993)
Perceived value	5	Likert 1–7	Dodds et al. (1991) and Zeithaml (1988), following Aufegger et al. (2021)
Source credibility (Expertise)	5	Semantic differential 1–7	Ohanian (1990)

Source credibility (Trustworthiness)	5	Semantic differential 1–7	Ohanian (1990)
Manipulation check brand	1	Forced choice	Study design
Manipulation check source	1	Forced choice	Study design
Brand loyalty	8	Likert 1–7	Lodorfos et al. 2006
Price consciousness	8	Likert 1–77	Aufegger et al. (2021) / prior scales
Attitude toward generics	5	Likert 1–77	Håkonsen et al. (2009), translated from Aufegger (2021) ; (Domeyer et al., 2017)
Health literacy	6	4-point (HLS-EU-Q6 score)	HLS-EU-Q6
Demographics	6	Mixed	Study design

Appendix 18 – Data Analysis Plan

Table 32 - Data Analysis Plan

Hypothesis	Analysis	PROCESS model	Primary test
H1-H3	Mixed factorial ANOVA	None	Main effects on purchase intention
H4a-H4b	Serial mediation	Model 6	Signal → quality/risk → value → intention
H5	Parallel mediation	Model 4	Source → expertise/trustworthiness → intention
H6a-H6b	Category moderation	ANOVA interactions + category-specific mediation	Pain vs. cold/flu
H7	Exploratory generational comparison	Interactions + stratified mediation	Gen Z vs. Millennials

Note. Indirect effects: 5,000 bootstrap resamples, 95% CIs; HC3 standard errors

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For this thesis, various tools capable of incorporating generative AI were used:

- DeepL Pro Ultimate
  - Using DeepL's Pro translation feature from French to English
  - Using DeepL Write's Pro feature, which allows to rewrite text in a more academic or professional style.

- Perplexity – Education Pro for Students
    - I mainly used it in the same way as a search engine, that is, to find academic sources related to the topics that interested me for this thesis.

- Gemini for Students
    - I mainly used Gemini through its NotebookLM feature, which made it much easier for me to organize all the sources I found for this thesis. Examples of prompts I used: "List all the articles in my NotebookLM where the dependent variable is purchase intention. "; "I'm looking for this information but I can't remember which article it was in, find the article where this topic is discussed. "
    - I also used Gemini to help me revise the structure of certain chapters that were much too long and that I was having trouble shortening.
    - Using Gemini before the final draft by providing it with the thesis writing guidelines from the Marketing Department to ensure that no avoidable errors were made in the formatting or citation style.
    - Using the "Code Partner" gem to get help with IBM SPSS and Limesurvey.

- ChatGPT for Pro
    - All the stimuli (packaging, women, background, …) were generated using ChatGPT Pro