Going Smokeless, But Not Risk-Free: Analysing Socio-Environmental Factors of Female Adolescents’ White Snus Consumption

A qualitative study

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Acknowledgments:

I would like to express my heartfelt gratitude to the remarkable group of girls who generously volunteered to participate in the interviews for this research. Without their invaluable contributions and willingness to share their insights, this master's thesis would not have been possible.
Abstract

The number of female snus users in Sweden has doubled since 2007, which can partially be a consequence of the introduction of white snus, a type of nicotine pouch. This carries significant implications for public health, particularly because a substantial proportion of young individuals who consume white snus had no prior exposure to other tobacco or nicotine products. Consequently, white snus has the potential to attract and introduce new young users to nicotine consumption. This qualitative study aimed to investigate the socio-environmental factors contributing to the consumption of white snus among female adolescents aged between 15 to 18. The data consists of 10 interviews. Guided by the Reciprocal Determinism Model, the study employed thematic analysis to explore the reasons for snus initiation, the continued use of white snus, and the circumstances that could lead to quitting its consumption. Three main themes emerged from the analysis: (1) desirability, (2) exploration and experimentation, and (3) hindrances. The findings elaborated on the socio-environmental factors behind white snus consumption. The marketing and advertisement strategies used by manufacturers were found to reinforce the continued use of white snus among female adolescents. Additionally, economic barriers were identified as the primary motivator for quitting consumption. Peer influence was consistently identified as the trigger for snus initiation. The study also highlighted the ineffectiveness of current regulations in Sweden, as they were easily bypassed, indicating a need for stronger measures to restrict access and limit advertising exposure. As white snus is expanding to countries outside of Sweden, the insights gained from this study can inform the development of early interventions and preventive measures by governments to reduce the likelihood of adolescent nicotine use.

Keywords
White snus, nicotine pouches, adolescents, girls, Sweden, socio-environmental, qualitative
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Introduction

Swedish snus is a type of moist or dry snuff that is placed between the upper lip and gums to gradually release nicotine through the mucus membranes. It contains both tobacco and nicotine. White snus is a variant of regular snus marketed as "tobacco-free", but it still contains high levels of nicotine extracted from the same plant as tobacco products. Nicotine is a highly addictive stimulant and leads to the development of nicotine tolerance, and regular consumption can result in adverse effects on health (Public Health Agency of Norway, 2019). White snus delivers nicotine to the brain quickly and can lead to addiction at a level similar to that of cigarettes (Foulds et al., 2003).

The report by the Swedish Council for Information on Alcohol and Other Drugs (CAN, 2021) explains that consuming snus in Sweden is more prevalent than smoking, and that historically, men have had higher usage rates than women. It also revealed that the number of female snus-users has doubled since 2007 which can be partially attributed to the introduction of white snus in 2017. White snus comes in the form of a white pouch and is available in various flavours like spearmint, violet, liquorice, and berries. The increase in the popularity of white snus, especially among younger women, has garnered significant attention in Sweden and the Swedish media. For example, the Swedish public service television channel SVT aired a documentary called "fångad av tjejsnuset" (trapped by the girl snus) in autumn 2022. It investigated the marketing strategies targeting a younger, female audience with white snus. According to Cullhed et al. (2019), white snus packaging is designed to appeal to women and younger consumers through modern names, tempting flavours, and its white packaging.

In recent years, there has been a remarkable decline in the global prevalence of tobacco use among individuals aged over 15, as reported by the World Health Organization (WHO, 2023). However, to counteract this downward trend, tobacco manufacturers are continuously introducing new smokeless tobacco products into the market. Consequently, the increasing prevalence of white snus, also outside of Sweden (Le Monde, 2022; BBC, 2022), raises concerns about its potential impact on public health. Given the growing popularity of white snus both in Sweden and abroad, especially among young people, this master's thesis aimed to investigate the socio-environmental factors that contribute to female adolescents’ white snus
consumption. It sought deepen the understanding of the implications of white snus use among young individuals and its potential impact on public health.

Background

The global use of tobacco among people aged over 15 has been on a decline, with the World Health Organization (WHO) reporting a decrease from 34.2% in 2000 to 23% in 2020. However, in response to this trend, tobacco manufacturers are innovating new smokeless tobacco products, including white snus, traditional snus, and e-cigarettes to serve the dual purpose of retaining their existing clientele while also enticing new users. Although snus has traditionally been consumed in Scandinavian countries, it has recently expanded beyond Scandinavian borders. A study conducted by Robichaud et al. (2019) revealed that major tobacco manufacturers, including British American Tobacco, RJ Reynolds Vapor company, Swedish Match, Kretek International, and Japan Tobacco International, had already begun selling nicotine pouch products, such as white snus, in European countries, Japan, and the USA. For instance, in 2006, 71% of smokeless tobacco products sold in the United States consisted of moist snus. Despite the sale of traditional snus and white snus being prohibited in the European Union (with the exception of Sweden, due to the country’s long tradition with snus), the market for white snus is rapidly growing across countries, including Austria, Croatia, Germany, Greenland, and the Czech Republic (Salokannel and Ollila, 2021). Young people continue to find avenues to access these products, despite the prohibition of its sales outside of Sweden, for instance in France (Le Monde, 2022). “A Non-Smoking Generation”, a Swedish organization (2022), has raised awareness about this issue, highlighting the increasing popularity of white snus among adolescents on social media platforms. Platforms like TikTok have witnessed a surge in the promotion and sharing of experiences related to white snus, leading to concerns raised by French authorities. The product has gained significant attention among French adolescents after being featured in social media accounts of various athletes (Le Monde, 2022).
2.1 Effects of white snus on health

As mentioned in the introduction, the nicotine present in white snus is a highly addictive stimulant and leads to the development of nicotine tolerance. Regular consumption of nicotine can result in adverse effects on health. According to the Norwegian report on health risks from snus use (2019), nicotine exposure has different effects on health: cardiovascular effects (for example increased heart rate and blood pressure), cognitive and mental health effects (for example if it is used accordingly to the self-medication hypothesis), immunological effects and effects on lung development if it is consumed during pregnancy. It is still unclear whether nicotine also qualifies as a complete carcinogen or not, however studies on animals have demonstrated that effects of chemotherapy and radiation therapy can be reduced with the consumption of nicotine (Norwegian Institute of Public Health, 2014). A study by Gunnerbeck et al. (2023) also showed that children of women who consumed snus during pregnancy had a 70% increased risk of dying during their first year and were also more likely to die from Sudden Infant Death Syndrome (SIDS) compared to other children. Although these effects most likely applied to women consuming traditional snus, the study’s findings showed that nicotine consumption overall in pregnancy is a risk factor for SIDS. The study concluded that prevention strategies should be targeted at all forms of nicotine consumption during pregnancy, including white snus.

The Swedish Heart and Lung Foundation (2022) explains that nicotine use increases the risk to develop type-2 diabetes (as it interferes with sugar metabolism) and can also increase the likelihood of death after a heart attack since nicotine also reduces the effects of the treatment drug nitro-glycerine, used to dilate the vessels during an acute heart attack. They also note that nicotine increases the brain's susceptibility to alcohol and other substances, which can make people who use nicotine more likely to use other substances that are harmful to their health. In light of the Chemicals Act (2023), the Finnish government is presently contemplating the prohibition of white snus sales and import restrictions in Finland (Ministry of Social Affairs and Health, 2023). Their rationale behind this proposition stems from the argument that nicotine, aside from elevating blood pressure and inducing addiction, poses potential health risks due to its withdrawal symptoms. These symptoms encompass challenges related to concentration, sleep, and overall capacity to complete work and academic performance.
In their study on snus package perception among youth in Norway, Scheffels & Lund (2017) explain that the public health effects of snus among youth is different from the adults’. While most adult snus consumers in Norway were previous smokers (meaning a notable harm reduction compared to cigarettes) most young snus users did not have a prior history of smoking. For them, this then translates into an increased risk of harm. According to the Norwegian Institute of Public Health (2019), it is uncommon for people to smoke and consume snus at the same time.

Balancing the health implications of snus consumption is a crucial issue for public health authorities. While using white snus instead of smoking can have positive health effects and reduce harm, it can increase health damage among new and young users (Lund & Vedoy, 2021). Lund and Vedoy (2021) refer to this as the "weighting principle" and emphasize the importance for health authorities to consider both perspectives when making policy decisions. While it can be claimed that white snus has decreased smoking rates in Sweden, the potential health risks associated with snus use cannot be ignored. Compared to other non-smoked nicotine delivery products, white snus delivers nicotine to the brain quickly and can lead to addiction at a level similar to that of cigarettes (Foulds et al., 2003). Snus may be a preferable alternative to smoking, with white snus considered a better option than traditional tobacco snus because it does not contain the tobacco leaf itself, only the chemical of nicotine. However, this is only true if individuals switch from cigarette use to snus use and there is no harm reduction if the white snus is enticing new users. Foulds et al. (2003) explain that from 1976 to 2002, there was a drop of 25% of male daily smokers and a 14% drop of female daily smokers. According to them, an estimate of 30% of male ex-smokers used snus to help them quit smoking. The fact that many young white snus users in Sweden had not tried traditional snus, e-cigarettes, or smoking before using white snus raises concerns that white snus may not only serve as a substitute for those trying to quit smoking, but also acts as an opening to the use of other tobacco products for young people. This issue is particularly pressing from a public health standpoint. As white snus acts as a path towards nicotine addiction, in countries where it is banned, it has the potential to encourage consumption of more harmful nicotine products.

### 2.2 Snus and white snus in Sweden: prevalence of use and regulation

According to the national report by CAN (2021), 20% of the Swedish population between the ages of 17 and 84 had consumed snus the last 30 days between the years 2003 and 2020.
Regardless of age, *traditional snus* consumption was more common among men than women in Sweden (CAN, 2021). However, white snus was more popular among women than men and has particularly increased in popularity among younger women (CAN, 2021).

Since white snus is a relatively new product (2017) on the market in Sweden as well (compared to the traditional tobacco snus), regulations for its branding and age limit were introduced only recently. Despite white snus originating from the tobacco plant, it does not fall under the regulations of the tobacco law and therefore lacks regulations. However, on August 1st, 2022, the age limit to purchase white snus was increased from 15 years to 18 years of age (SFS 2022:1257). Starting from January 2023, new regulations will be implemented throughout the year on all non-smoking nicotine products. These regulations will encompass stricter rules on the products and their packaging, for example a clearer display of the products’ health hazards (Public Health Agency of Sweden, 2022). In the European Union, the Classification, Labelling, and Packaging regulation (CLP) play a crucial role in setting criteria for identifying and communicating health hazards associated with various products, ensuring consumer safety, and facilitating effective risk management throughout the supply chain (European Chemical Agency, 2023). It encompasses the use of informative elements like pictograms, signal words, and prevention statements to convey essential information to users. CLP serves as a foundation for legislative provisions related to chemical risk management.

As of January 1st, 2023, the regulatory framework in Sweden has undergone a significant change, classifying white snus within the same category as food items. Consequently, anyone involved in the sale of white snus is required to adhere to the CLP regulations. Effective from January 1st, 2024, it becomes mandatory for individuals engaged in the sale or importation of white snus to report these products to the Swedish Public Health Agency and notify any modifications made to the product. Additionally, starting from March of each subsequent year, manufacturers and importers of white snus will be obliged to provide comprehensive data on the sales volume of white snus, as well as information regarding the preferences exhibited by various consumer groups. These reporting requirements are likely to offer a more comprehensive understanding of white snus consumption in Sweden to relevant public authorities (Public Health Agency of Sweden, 2023).
2.3 Previous research on white snus

In the field of public health in Sweden, there has been significant research conducted on snus. However, white snus has received comparatively little attention from scholars. Most existing studies on white snus have approached the topic from a business or media perspective, analysing its marketing strategies and portrayal in social media. Additionally, the existing body of scientific research primarily centres around traditional snus, with only limited attention given to white snus. The Public Health Agency of Sweden (2023) highlights the need for further research and understanding regarding the potential health risks posed by emerging products, including white snus. Given the relatively recent introduction of these products, a comprehensive evaluation of their long-term effects on human health is still undergoing. This ongoing research aims to provide a more comprehensive understanding of the potential risks associated with their use and inform evidence-based guidelines for public health.

While quantitative studies have provided valuable information about the prevalence of snus use and specific groups at risk, they have not offered a comprehensive understanding of the reasons behind fluctuations in consumption. For instance, a recent study by Raninen et al. (2023) found that while total tobacco use among 9th graders has declined significantly in Sweden between 1991 and 2020, the introduction of "all white snus" in 2017 has led to an increase in snus use, particularly among girls. However, their research did not offer any explanation or understanding regarding the underlying causes or reasons behind the observed phenomenon. Therefore, conducting a qualitative analysis of the socio-environmental factors driving this increase in snus use can provide valuable insights into the issue.

Similarly, Patwardhan & Fagerström (2022) also explain that there is still a lot of research needed in the field of nicotine pouches as a harm reduction tool before regulators, consumers, and public health experts can agree that these products are useful for reducing harm and quitting smoking. They put forth a comprehensive research agenda targeting specific areas that hold significance in regulating nicotine products and fostering consumer awareness. By undertaking research in these key areas, valuable insights can be gained to inform effective regulatory measures and educate individuals about the use of these products. This includes research on the likelihood of unintended use in the population. For instance, if the products are used by non-tobacco users and adolescents, would they serve as a gateway to other tobacco products? They also highlight the need for research on unintended users, referring to individuals who do not currently consume nicotine or tobacco products. By examining the
behaviour and experiences of unintended users, appropriate interventions can be developed to minimize the risks and protect public health. Research concerning the maximum accepted level of nicotine per pouch is also important, especially in countries where there are no regulations. This would prevent manufacturers from surpassing reasonable limits and ensure that the products remain within safe parameters and diminish potential health hazards associated with excessive nicotine exposure.

2.4 White snus among adolescents and socio-environmental factors

The Public Health Agency of Sweden’s report on adolescents’ views and perception on snus (2022), stresses that the consumption of snus in Sweden among young people has increased, especially among girls. In this report, they also highlight the limited available knowledge about adolescents’ thoughts and attitudes on more recent nicotine products, including white snus. Further knowledge within this area would enable policymakers to develop more successful prevention methods and control policies and therefore, this thesis aimed to explore different socio-environmental factors contributing to female adolescents’ (aged 15-18) consumption of white snus.

Socio-environmental factors refer to experiences that are influenced by the context in which they appear. These experiences can either have a negative impact on health (such as stressful events challenging life circumstances), but they can also have a positive impact by fostering strong social connections that can promote health. (Roberts and Bogg, 2014.) Woolf (2013) explains that socio-environmental factors can help understanding an individual's overall health status, encompassing both their physical and mental well-being. Of particular importance are the stability and quality of one's social connections, as well as the presence of a supportive social environment, for instance within educational or occupational settings. The presence of a stable social network and a reliable support system can influence an individual's health behaviours (including substance use, such as white snus). For instance, the availability of social support serves as a protective factor against the detrimental effects of stress, shaping and influencing one's responses to stressful situations. These socio-environmental factors, therefore, qualify as crucial determinants in the interplay between social dynamics and individual health outcomes (see section 4.5 and 4.5.1 for analysis and theoretical framework, p. 13-16)

The changes in a person's social life during their teenage years and early twenties, which span from ages 10 to 24, are crucial for shaping their future life paths (Hall et al., 2016). Substance
use overall is typically initiated during adolescence and emotional and behavioural patterns can become ingrained based on experiences during this particular period (Del Giudice et al., 2009). In her research, Kobus (2003) also explains that peer influences need to be inspected in more detail since there is limited research on our knowledge of how adolescents are socialised to smoke. For instance, she explains that peer relationships play an important role in the use of cigarettes and that it is common for a smoker to have other smoking friends and vice-versa. She also discusses that youths who do not smoke and befriend smokers, run a higher risk of starting to smoke than those who do not affiliate with smoking friends. This suggests that a person's peers have a significant impact on whether they are inclined to participate in substance use. In their research, Edvardsson et al. (2012) conducted a study aimed at identifying socio-environmental factors differentiating adolescents who refrained from using snus or cigarettes from those who did. The findings of their study highlighted a significant association between having a tobacco-free best friend and being free from snus and cigarette consumption, irrespective of gender. These results strongly suggested that the presence of a "tobacco-free environment" played an important role in shaping the likelihood of adolescents abstaining from the use of cigarettes and snus.

The national report conducted by CAN in 2021 investigated the experiences of students regarding various substances, including snus, alcohol, tobacco, gambling, doping, and narcotics. The study encompassed a sample of ninth-grade students (14-15 years old) and second-year high school students (17-18 years old). Notably, this survey marked the first time that a distinction was made between traditional snus and white snus usage. The findings of the report revealed a higher prevalence of white snus experimentation among girls in high school compared to boys, who were more inclined towards consuming traditional snus. The report makes a notable observation: a significant proportion of girls who experimented with white snus had no prior exposure to traditional snus, cigarettes, or e-cigarettes. Figure 1 graphically represents this trend, displaying the percentages of students, differentiated by gender and grade level, who have used other tobacco or nicotine products prior to their introduction to white snus.

Figure 1.
Percentage of students who had used other tobacco-/nicotine products before trying white snus by gender and grade according to the national school report by the Swedish Council for Information on Alcohol and Other Drugs, 2021.
Subsequently, in April 2023, CAN released an updated report based on surveys collected in 2022. This recent report indicated a concerning rise in the usage of white snus among boys in the ninth grade, showing an increase compared to the previous year's data.

However, the consumption of white snus was more frequent among women than men, both in the ninth class (19% vs 17%) and in high school (37% vs 31%). Among male students who had consumed white snus, 61% in the ninth class and 77% in high school had also used traditional snus before the white snus. However, among female snus-users it was more common to have tried smoking before using white snus (43% in year nine and 46% in high school) than traditional snus. There was also a relatively large group of students who had never tried either traditional snus, smoking or e-cigarettes before trying white snus: 23% of boys and 38% of girls in year nine.

Previous research offers a good understanding of the use patterns or tobacco product history of white snus users, but not about the socio-environmental factors.
Study aim

The aim of the thesis was to explore different socio-environmental factors contributing to female adolescents’ (aged 15-18) consumption of white snus.

Research questions:

- What are the main reasons for **white snus initiation** among Swedish female adolescents;
- What are the main reasons for **continued use of white snus** among Swedish female adolescents;
- What circumstances would contribute to Swedish female adolescents **quitting their use of white snus**?

Methods

4.1 Study design

A qualitative approach was chosen to provide a deeper understanding of the field of research with the help of the female adolescents’ own thoughts and experiences. Therefore, the data of this study consisted of interviews. The goal was to gain an insider’s perspective (Padgett, 2012) and to answer questions such as “why” rather than “what”.

4.2 Recruiting participants

Participants were recruited through purposive sampling (Isaacs, 2014). This means that only participants who fulfilled the inclusion criteria were selected since the research aimed to explore female adolescents’ consumption of white snus in Sweden. Therefore, participants who could provide first-hand experiences on the topic where chosen. All interviews were conducted in Swedish. To participate in the study, participants need to fulfil the following criteria:

- Identify as female.
- Be 15, 16, 17 or 18 years old.
• Have consumed white snus regularly (every week) at some point in their lives or currently consume white snus regularly.

An e-mail was sent out to a school that had previously participated in projects with The Swedish Council for Information on Alcohol and Other Drugs (CAN). The e-mail address to the school counsellor was communicated through contact with a person in charge of the CAN national school surveys. The school counsellor answered and communicated an information sheet and an interest form (see Appendix A) to their students on the school’s online platform. The students who were interested in participating could fill in an online interest form where they could leave their contact details and enter information to ensure that they fit the inclusion criteria. Three students signed up for the interview through the interest form and were contacted to schedule a meeting over Zoom. Only one of those three attended the scheduled meeting. At the end of the interview, the participant said that they would ask their friends if they were interested in taking part (snowball sampling, see Isaacs, 2014). This way, three other meetings were scheduled over Zoom. All four of these meetings began with the interviewer reminding the interviewees about the fact that the participation was voluntary, and that the conversation would be recorded. Once the participant had given their oral consent, the interview could start. Each interview lasted approximately 20 minutes.

To recruit more participants, the information sheet was printed out and the interviewer went to Stockholm City Centre to find potential participants. The interviewer approached young girls and presented herself as a student from Stockholm University who was looking for participants willing to take part in a 20-minute interview. If the person agreed, they were asked questions to establish whether they fit the inclusion criteria or not. A total of seven out of 15 individuals who were asked fit the criteria and one of them did not want to take part in the interview. For those who fit all criteria and were willing to participate, they were handed the information sheet and were offered to take a picture of it to store the information about the study. After that, the participant and the interviewer went to a calm place nearby to conduct the interview. Participants were reminded that their participation was fully voluntary, that they could interrupt it at any time if they did not want to finish it and that the interview would be recorded. After they gave their oral consent, the interviewer proceeded with the interview. In total, the data consisted of 10 interviews (see Table 1).

Table 1.
Table of participants.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Age</th>
<th>County of residence</th>
<th>Tried something else before trying white snus</th>
<th>If yes, what?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>Stockholm</td>
<td>Yes</td>
<td>Cigarette</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>Västra Götaland</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>Stockholm</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>Stockholm</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>Dalarna</td>
<td>Yes</td>
<td>Cigarette</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>Stockholm</td>
<td>Yes</td>
<td>Cigarette</td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>Stockholm</td>
<td>Yes</td>
<td>Cigarette</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
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<td>Cigarette</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>Stockholm</td>
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<td>E-cigarette</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>Stockholm</td>
<td>Yes</td>
<td>E-cigarette</td>
</tr>
</tbody>
</table>

4.3 Semi-structured interviews

For this thesis, a semi-structured interview was constructed to explore participants' consumption of white snus. Using semi-structured interview is a valuable method for gathering rich, detailed data about participants' experiences and perspectives (Brinkmann, 2014). To ensure that the interview covered all relevant topics, an interview guide was created (see Appendix B). The interview guide was structured into five sections, including introductory questions and information, questions about the participant's own consumption and initiation to white snus, questions about their thoughts and perspective on white snus, questions about white snus consumption in their surroundings, and finishing questions about their thoughts on quitting white snus. At the end of the interview, participants were given the opportunity to ask questions or provide any additional information they felt was important. If
a participant expressed a desire to quit white snus, they were provided with resources to receive support.

Since the interviews were semi-structured, the interviewer adapted questions according to participant's responses and only asked relevant follow-up questions to allow for flexibility to explore new topics that arose during the conversation. Participants were encouraged to share their personal experiences and opinions on the subject matter.

4.4 Ethical considerations and transparency

The ethical considerations of this thesis were guided by the Swedish Research Council's ethical principles, which include providing information, ensuring confidentiality, obtaining informed consent, and utilizing data appropriately (Swedish Research Council, 2017). Participants were informed about the study's purpose, voluntary nature, and pseudo-anonymization through an information sheet. Given that the participants were young, the language used to explain their rights was simplified to ensure understanding and informed consent was obtained during the interview. As all participants were over 15 years old, parental consent was not required. The right to withdraw from the interview at any point and to refrain from answering questions was emphasized during all the interviews, particularly those conducted in person, to avoid any feelings of obligation or power imbalance. For online interviews, the researcher reminded participants to ensure a comfortable environment for the interview. For instance, one interview was cancelled when the participant's parents were present, and the participant did not feel comfortable speaking candidly.

The author carefully designed the interview questions to address the potential harmful health effects of white snus only if the topic was raised by the interviewee. This deliberate approach aimed to create a supportive and non-judgmental environment, ensuring that participants did not experience feelings of blame or shame regarding their use of white snus. By allowing participants to lead the discussion on this sensitive topic, the author sought to foster open and honest dialogue, encouraging participants to freely express their experiences and perspectives. In cases where a participant expressed a desire to quit using white snus but expressed uncertainty about how to do so, the interviewer provided helpful guidance. As part of this support, participants were referred to an online resource for further assistance, which can be found in Appendix B. The author acknowledges the importance of respecting the autonomy and individual choices of the participants. The provision of the online resource served as an additional means to offer support to those who expressed a desire for change while
recognising that the ultimate decision to quit or change their use of white snus remains in their own hands.

4.5 Analysis
The study embraced an abductive approach, integrating both inductive and deductive thinking while maintaining a solid logical foundation (Patton, 2014). The researcher possessed a theoretical pre-understanding during the data analysis process but did not analyse the data to conform to the theoretical framework. The abductive research approach occupies a middle ground between the inductive (bottom-up) and deductive (top-down) approaches, avoiding both data-driven and hypothesis-driven orientations (Thompson, 2022). As captured by Denzin (1978, as cited in Patton, 2014, pp. 561), it can be described as "working from consequence back to cause or antecedent."

By adopting an abductive approach, the researcher explored any disparities that emerged when empirical data diverged from anticipated outcomes based on existing theoretical knowledge (Thompson, 2022). The author selected the abductive approach as the most suitable for the study, aiming to uncover a meaningful explanation for the phenomenon at hand and devise a logical resolution to the problem (Thompson, 2022).

The recorded interviews were transcribed. After the transcribing of the interviews, the interviews were reviewed and re-read multiple times before proceeding to the initial coding. The data was analysed using qualitative thematic analysis, and the NVivo software was used to assist the coding process by storing the inputted data to retrieve it more efficiently (Patton, 2014). Thematic analysis was the chosen method of analysis as it allowed the identification of overarching themes across interviews and an interpretation of the themes. This made it possible to clearly differentiate between the different drivers behind female adolescents’ snus consumption to help provide relevant insights when formulating prevention strategies. Braun and Clarke (2006), describe thematic analysis as a method used to identify, analyse, and report patterns within the data. In other words, it organises the data. They argue that thematic analysis provides clarity on the process, allows for transparency, and makes it possible to evaluate and compare the research with other studies in the same field. Braun and Clarke (2006) also highlight that contrary to common beliefs, the researchers play an active part in the process of identifying themes and that these do not merely “emerge”. In fact, the patterns
are filtered through the researcher’s own perspective and internal views, meaning that the process is *reflexive* (Braun & Clarke, 2021). The importance of the theoretical framework matching what the researcher wants to know is also emphasised. In this study, the interest is to investigate and decrypt the socio-environmental factors in shaping the interviewee’s consumption of white snus.

The reflexive thematic analysis in this study was based upon Braun and Clarke’s (2021) updated step-by-step guide including six phases:

Phase one consisted of familiarising oneself with the data and writing familiarisation notes: Here, the interviews were printed out and read multiple times. After the transcripts were uploaded in NVivo, notes were taken and added next to the text. These notes included thoughts, reminders and other information deemed important by the researcher. The second phase was called “systematic data coding”: During this phase, multiple codes were expected since they were consistent with the interview guide. Other codes came up more organically. Thirdly, initial themes were generated from the coded data. After that, the themes were developed and reviewed. The fifth phase included refining, defining, and naming the themes. Lastly, the report was written.

4.5.1 Theoretical framework

The Reciprocal Determinism Model (RDM), a model based upon Social Cognitive Theory (SCT), was used as a theoretical framework during the data analysis process (Smith, 2021). It served as a tool during the coding process, to assist the researcher in analysing the data in relation to the study aim and the research questions. In order to better understand the RDM, SCT will be briefly explained: SCT suggests that behaviours and attitudes are acquired through observation, imitation and reinforcement (Bandura, 1971). It helps to explain how a behaviour is acquired, but also how it is maintained. SCT has been applied in a variety of fields and is also relevant when studying addiction and drug use (Cleaveland, 1995; Smith 2021; Sharma, 2005). It proposes that substance use behaviours can be learned and reinforced through exposure to substance use among peers, family members, or media depictions. Reciprocal determinism is a key concept of SCT and is used to describe the interaction between the different components of SCT. The RDM presents the dynamic and reciprocal interaction between behavioural-, environmental- and personal factors and explains how they influence one another to help justify a behaviour (Smith, 2021). Personal factors can be
described as any biological, cognitive, or affective event. Environmental factors are any external influence, such as laws. The behavioural factors are the behaviour patterns that a person engages in. In other words, RDM proposes that behaviour is influenced by the interplay between internal and external factors. The model has been used to explain the development of addiction. Smith (2021) uses the model with the example of “drug use” and explains how the components interact bi-directional relationship and produce differences in drug use across individuals. In this example, personal factors include, for example, genetic components, childhood trauma and early drug exposure. Socio-environmental factors include the individual’s social surroundings, but also economic factors (for example laws and regulations, price of drugs) and information exposure. The combination of these factors impacts the individual’s drug-use behaviour, for example whether they escalate their use or how they acquire the drugs. Smith (2021) also highlights the role of social reinforcement in the maintenance/escalation of drug use and the impact that imitation can have on the amount and patterns of drug use. In this study, RDM served as a theoretical framework to analyse the socio-environmental factors linked to the use of white snus among female adolescents in Sweden and how the three dimensions are interconnected. While personal factors were acknowledged, they were not the primary focus due to the inherent difficulty of addressing sensitive topics like trauma within the constraints of short interviews.

Figure 3.
Model of reciprocal determinism as proposed by Bandura (1971) and Model of Addiction based on reciprocal determinism presented by Smith (2021).
Results

The data was analysed using the RDM as a theoretical framework to support the author in the coding process. Within the dataset, three prominent themes were identified, each comprising a comprehensive set of four subthemes. The first theme labelled “desirability” encompassed elements that enhanced the appeal of consuming white snus. These elements shed light on the factors that contributed to the attractiveness of white snus among the participants.

The second theme, identified as “exploration and experimentation”, revealed distinct patterns associated with factors influencing participants' inclination to experiment with white snus. This theme encompassed socio-environmental and personal factors that played a significant role in driving participants' curiosity and motivation to explore white snus.

Lastly, the third and final theme, titled “hindrances” identified aspects that posed challenges to participants in their consumption of white snus. This theme highlighted the obstacles and difficulties encountered by the participants, providing valuable insights into the barriers they faced throughout their experience with white snus.

Figure 4.
Coding tree presenting each theme and subthemes.
Theme 1: Desirability

The first identified theme was “desirability”. It capsulated the various factors that have made consuming white snus more appealing to the participants. The theme was further divided into four subthemes: image, novelty, advertisement exposure and continuum. The four subthemes contributed to creating conditions that have enabled the continued use of white snus. These findings suggest that socio-environmental factors play a significant role in shaping the desirability of white snus use, which falls under the social dimension of the RDM.

Image

The analysis of the data helped identify the subtheme “image”. The participants expressed a perception that white snus has become linked to a new and fresher image, particularly when compared to the traditional brown snus. The participants discerned the image associated with snus as outdated and suggested that white snus has challenged the conventional norms.

Hm...It kind of feels like white snus isn’t as extreme as brown...like brown snus...yeh, it’s gross. [...] it feels...like, you’re 40 and you have yellow teeth. Which you can get from white too, but yeh... (4)

Four participants discerned white snus as a more socially acceptable form of snus use among girls compared to brown snus. They suggested that the use of white snus among girls has been normalised, whereas the use of brown snus was considered more acceptable among boys. Brown snus elicited feelings of disgust and the participants noted a gender-based preference for white snus.
He [the participant’s boyfriend] uses brown snus...And so he usually jokes that he is, like, a farmer...and all. And that it’s...yeh...not fresh. (10)

Hm...I think it has become a cool thing. Like, it started with all the boys using snus, so I guess the girls thought: “we can do that too”. And then I think a lot of girls jumped on it, with white snus. (3)

Advertisement exposure
The majority of the interviewees reported being exposed to advertisements for white snus, despite the fact that advertising white snus to individuals under the age of 25 is prohibited. Nearly all participants acknowledged having seen white snus advertisements, primarily online and specifically on TikTok. These findings suggest that despite regulatory efforts, the exposure of young people to advertisements for white snus remains a pervasive issue. Although they did not explicitly connect their white snus consumption as a direct result of advertising, it was noteworthy that a few expressed a desire to try a product after having seen it on social media.

Like...I get a bit annoyed when it’s [advertisement] like, in the public. At least on the phone it’s like...I don’t know. But when you see it, you start craving it. So yeh, I get a bit annoyed. (4)

One participant explained that she had purchased an item after seeing it appear as an advert online:

Like, I got one [a pack of white snus], like a really big pack, once. [...] And my friend bought that for another friend, as like a birthday present, and there was like 400 pouches in one pack! (1)

An intriguing discovery from the study was that two participants expressed concerns that the advertising of white snus could negatively influence younger individuals. When acknowledging this, the researcher got the impression that they considered themselves as older, despite being under 18. Rather than saying “even though we are under 18”, they expressed it as “they are under 18”. This finding could suggest that the participants may have a desire to be perceived as more mature or adult-like.

Hm...like, it [advertising] can be both good and bad. Because a lot of young people follow these influencers and probably want to try it. Even though they are under 18. (10)

Yes, I think it’s a bit bad that it is advertised to people under 18 since it is illegal. (9)
This subtheme highlights the importance of critically examining the impact of advertising on individuals' perceptions and behaviour.

**Novelty**

The interviewees expressed that the continuous innovations of new flavours of white snus made it more attractive and incentivized them to try new products. Seven of the participants had bought a new pack of white snus only for the sake of trying a new flavour. Among the three interviewees that had not bought one only to try a flavour, they still had tested different flavours, for example, from their friends. This subtheme suggests that the introduction of new flavours is a key factor in driving the consumption of white snus, as the participants expressed that the different flavours tempted them to try a new flavour than the ones they are used to consume.

*No, but…I think…I like jalapeno the most. Because I think it has the best taste. But I…like, it depends. Sometimes you want something more minty. Like freeze. So…yeah…but it’s not like I actually enjoy it. Like, from Ice Cool you get a gag reflex and it’s really gross. So yeh. It’s mostly jalapeno that I go for.* (4)

*Like…If I have tested a new one and I have liked it, I have kept using it. But otherwise, I have given it away to a friend, or I have sold it.* (10)

**Continuum**

As part of the study, participants were asked if they had switched the strength of the snus they use over time. All 10 participants reported having made changes to the strength of their snus use. The strength gradient of snus varies across different brands, with most having a scale ranging from one to four or five, with five being categorized as "extra strong." This allows consumers to readily switch to a stronger product as they become accustomed to the lower strength ones. This emphasizes the potential risks associated with the existence of a gradual increase of nicotine among brands, as it fuels the development of nicotine tolerance.

*And like...all the different flavours have different strengths, but it’s the same thing. I’ve tried mint which is the same strength level as the one I use, but it feels like a lot more, I feel.* (6)

The majority of the participants reported beginning their snus use with the lowest strength option or the "mini-version," which contains smaller pouches with lower nicotine levels compared to regular "level one strength" snus. One participant noted an exception, stating that
she initially started with a higher strength level due to having previously smoked and being accustomed to it. This highlights the commonness of starting with lower strength white snus and the importance of considering individual factors, such as prior smoking experience, when assessing patterns of snus use:

_Hmm... so, I started out quite strong. Like, I was used to the nicotine. Because I used to smoke quite a lot. I started with three out of four. And then I changed because... well, because of the flavour._ (7)

**Theme 2: Exploration and experimentation**

The theme "exploration and experimentation" related to two of the dimensions of the RDM: social and personal factors. It explains how the interaction of both dimensions can impact the behaviour (using white snus). This theme presented factors in the female adolescents' lives that motivated them to experiment with snus in the first place. Four subthemes were identified within this theme: influence from friends, bonding experience, physiological exploration, and choice. These insights could be useful in developing targeted interventions aimed at reducing experimentation with snus among adolescents.

**Influence from friends**

Among the participants, only one interviewee did not mention their friends as a factor in trying white snus for the first time. The remaining participants reported that they had tried snus for the first time due to influence from a friend.

_I got it from a friend. I guess I wanted to be cool or something... yeh... yes, that was the first time._ (5)

These findings highlight the role of social influence in the initial experimentation with snus, particularly among young people. These insights can inform efforts to address snus experimentation and its associated health risks among adolescents, emphasizing the importance of considering peer influence in such interventions. This subtheme relates to the next theme, “bonding experience”.

**Bonding experience**
The participants shared their experiences of trying white snus for the first time with their friends and described the context surrounding it, their feelings, and motivations for experimenting with it. These stories revealed a shared experience of bonding with friends and completing an experience together. The interviews revealed that consuming white snus was almost considered as a social activity that is easily accessible to do with friends.

*Like, you see your friends doing it and then you also want to try it...yeah...just to see how it is. See what kind of rush you get...and what happens when you try the white snus. You get curious, I think.* (8)

During the interview, one of the participants described that she used to take a snus after finishing her workout. However, when she decided to quit, it became challenging for her to resist the urge to take one when she was in the car with her friends on the way back home.

*Hm...many people in my team and friends...that’s the thing. I was going to quit snusing, but we always go back from training together so that made it a little difficult.* (4)

This highlights the impact peers can have on a behaviour, even though it is not explicitly considered as peer pressure.

**Physiological exploration**

Discovering the effects that white snus can have on their bodies was a recurring theme in many interviews. Three interviewees mentioned that they experienced a so called “nicotine rush” when they tried white snus for the first time. This rush was considered as exciting. For example, to the question addressing the interviewee’s thoughts on the increase in popularity of white snus among girls, one participant answered the following:

*Like, you see your friends doing it and then you also want to try it...yeah...just to see how it is. See what kind of rush you get...and what happens when you try the snus. You get curious, I think”* (8)

A few also mentioned the calming effects it could have, for example:

*It was with my friend and she had some [white snus] when we were going to study and we were sitting and she was like “oh my god, I have to take a snus, it calms you down so much”. Because it was so stressful. And I asked, “can I try?” and I took one and it was very calming...so, yeah...* (1)
One of the participants explained their experience of the effects of white snus on their body like this:

_Hm...yeah...no but I feel like if you are happy, it [the white snus] makes you happier. If you are sad, it makes you happier. If you’re hyped, it calms you. And if you’re too calm, it hypes you up. It’s like you get to the middle._ (4)

This indicates that for this participant, consuming white snus acts as a coping mechanism which they resort to, in order to feel better.

**Choice**

Some participants also expressed their personal choice to experiment with white snus, despite knowing that it might not be a pleasant experience and could lead to physical symptoms. This illustrates how socio-environmental factors can be embodied and lead someone to make an active choice to experiment with white snus. Naturally, internal factors, such as stress, trauma, and genetics, can also play a role in this, which is consistent with the "personal factors" level of the RDM.

Notably, one participant shared an intriguing perspective on why she believed white snus had gained popularity among younger girls and reasons why she believes someone would try it:

_Often, as a young girl, you tend to be around older girls and start to snus. Hm...it’s often because of friends...and sometimes you want to test it by yourself, like you just feel like trying._ (7)

This subtheme indicates that there is an interplay between the social and personal factors in the participants’ decisions to try white snus. Particularly, it highlights the importance of considering individual differences in an individual’s behaviour and that their use of white snus does not necessarily have to be a consequence of their social environment. The personal dimension presented in the RDM also plays an important role.

**Theme 3: Hindrances**

The third and last theme identified from the data was named “hindrances”. This theme also covers the personal and social dimension of the RDM. It encompasses factors that act as barriers for the participants use of white snus or factors that affected their willingness to
consume it. The hindrances were further categorised into four subthemes: health awareness, financial concerns, authority figures and institutions and access difficulties. The participants shared their perspectives on how these factors were seen as elements to consider for their use of white snus, and the extent to which they valued them.

**Health awareness**

The participants displayed a low level of concern regarding the potential health effects of white snus. Although all participants acknowledged that they were aware of the harmful nature of the product, they were not able to specify the exact health consequences associated with its use. However, when prompted, they were able to provide some general examples of the effects of nicotine on health:

Two participants mentioned that it could lead to cancer, specifically gum cancer and cervical cancer. In addition, five other participants mentioned that they knew that it could have negative effects on their oral health:

> *I hear a lot of people say that the white snus corrodes their gums, like, so they need to snus on the lower gums instead. It’s so crazy. I’ve heard things like that. And that, like, the teeth become yellow if they use traditional snus.* (3)

Three participants had knowledge from a documentary they had watched in school or their school nurse concerning the health effects of white snus. These participants seemed to have a clearer image than the others on the effects it could have on their health. Despite this, only three interviewees expressed that they would consider quitting white snus for health-related reasons.

The fact that most participants were not able to mention any effects nicotine could have on their bodies suggests that more awareness on the effect of white snus on health is needed.

**Financial concerns**

The participants were asked about their plans for using white snus in the next five years and the reasons for quitting if they had such plans. Most participants expressed that economic factors would be the primary reason for quitting their use of white snus. They stated that it is
not currently a significant issue for them as they were students receiving financial aid (CSN) or have an allowance.

_Hmm... in five years, I will be 21. Maybe even 22. And then I feel like I will need to starting thinking more of my economy, so then I won’t snus at all._(1)

Only two interviewees did not express any concerns for the financial aspect of using white snus. One participant explained that her motivation to quit would only be for health concerns and another did not express any concern for economic reasons, stating that she was not the one who paid for it since her mother bought it for her. Out of the 10 interviewees, two adolescents were provided with white snus by their parents.

**Authority figures and institutions**

Throughout the interviews, a common thread was identified regarding physical barriers that could hinder the participants' consumption of white snus. The participants described various obstacles that could prevent them from using white snus. Some of these barriers were directly stated, while others were indirectly implied.

**School**

One interviewee (3) explained that their school was “nicotine-free” and “tobacco-free” which means that the students are not allowed to use products containing nicotine or tobacco in the school. For example, this means that students could not have a snus pack laying visibly on their desk.

However, this was not seen as motivator to quit, since the participant expressed that they bypassed the rule by consuming white snus more secretively instead.

**Parents**

According to the interviewees, parents influenced the participants’ behaviour and attitudes towards white snus. The interviews revealed that most of the participants hid their consumption of white snus from their parents due to the expectation of parental disapproval. It was evident that the participants viewed their parents as potential obstacles to their use of white snus. Prior to the interview, a few participants expressed concerns about the participation process, as they were worried that their parents might find out about their involvement, which could lead to repercussions. Four of the participants disclosed that their
parents were aware of their consumption of white snus, and in some cases even facilitated it. These participants explained that their parents bought the white snus for them. This finding contrasts with the general trend among the other participants of hiding their use of white snus from their parents. However, since white snus is a relatively new product, it is important to consider that not all parents may be aware of what the product is, as expressed by one participant (2):

   *My mother knows...but I don’t think she really understands what white snus really is...she’s not someone who smokes or uses snus... so she doesn’t really know.* (2)

This finding indicates that parental approval or disapproval does play a role in the adolescents’ attitudes towards white snus. Hence, ensuring that parents do not normalise the use of white snus is important to avoid normalising the use of white snus when underaged.

**Access difficulties**

In terms of accessing white snus, participants reported that regulations prohibiting the sale of white snus to individuals under the age of 18 served as a hindrance. Despite this, most interviewees had developed strategies to work around these regulations and obtain white snus. They expressed that it was relatively easy to access the product.

   *Most people have a fake ID, like they use FrejaID...like, an ID they got from a friend but they put their own social security number. Or they use their older siblings’ IDs if they look relatively alike.* (3)

This subtheme classifies as a hindrance due to the age limit on white snus, which is meant to make the white snus unavailable to those under the age of 18. However, since it was expressed that the age limit was easily bypassed, the regulations on the purchase of white snus do not represent an obstacle as large as they were expected to do.

Being aware of the strategies used by adolescents to access the products could help relevant authorities to bring this to the attention of the sellers.
Discussion

6.1 Discussion of findings

The present study used a qualitative approach to examine the factors contributing to the consumption of white snus among female adolescents in Sweden. The analysis was guided by the RDM, which allowed for an exploration of the internal and external factors that influence white snus initiation and continued use (Smith, 2021). The results emphasised the crucial role of peer influence in both initiating and continuing the use of white snus.

Three themes emerged from the analysis: desirability, exploration, and hindrances. To begin, the results will be summarized in relation to the three research questions:

What are the main reasons for a) white snus initiation, b) continued use of white snus among Swedish female adolescents; and c) What circumstances would contribute to Swedish female adolescents quitting their use of white snus?

The RDM framework was used to analyse the results of this qualitative study, which aimed to explore the factors influencing the use of white snus among female adolescents in Sweden. The RDM framework helped to identify the internal and external factors influencing white snus consumption and how they were interrelated. The consumption of white snus was summarized in Figure 4, which depicted the dynamic interaction of the RDM's different levels. The figure can be applied to illustrate the initiation, continued use, and motivation to quit white snus among the female adolescents in Sweden.

Personal factors, including vulnerability to addiction, coping mechanisms, and personal motivations played a significant role in the consumption of white snus, however these were not the focus of this thesis. Instead, it focused on the socio-environmental factors. Social factors, such as advertisement exposure, peer pressure, and governmental regulations were found to heavily impact the consumption of white snus. It was the combination of personal and social factors which influenced the behaviour of the female adolescents, including their decision to try white snus, gradually increasing the strength of the product, acquire it, and decision to quit using it. This highlights the dynamic interaction of the three levels of the RDM to influence the consumption of white snus among female adolescents in Sweden. For instance, some participants used white snus as a mean to quit smoking (personal factor), but since they were underage, they needed a way to access the product, and in some cases, the
parents provided it (social factor). This allowed the participants to consume white snus despite not being able to purchase it legally, which impacted their decision to continue using (behavioural factor) it, as the financial incentive to quit was not there.

Behavioural factors also influenced personal factors, as the use of white snus became a coping mechanism for some participants. Furthermore, behavioural factors influenced socio-environmental factors, as the consumption of white snus by a person within a social circle exposed the product to others in the group. Overall, the RDM framework helped to understand the interrelatedness of personal, socio-environmental, and behavioural factors influencing the consumption of white snus among female adolescents in Sweden.

6.1.1 Initiation of white snus

The theme of desirability shed light on the main reasons for white snus initiation among young females. The factors that made white snus desirable and attractive included marketing strategies and the image of white snus portrayed in Sweden. Additionally, the theme “exploration and experimentation” was also found to play an important role in driving female adolescents to experiment with white snus. These factors, in combination, highlighted the susceptibility of this group to the targeted marketing strategies (Cullhed et al., 2019) of corporations and the desire to experiment that is common during adolescence (Del Giudice et al., 2009).

Overall, the findings suggested that the initiation of white snus among female adolescents in Sweden is influenced by a combination of personal and socio-environmental factors, including marketing strategies, influence from friends, the image of white snus, exploration and experimentation, and accessibility. These findings have implications for public health policies and strategies aimed at reducing the consumption of white snus among adolescents.

6.1.2 Continued use of white snus

Although the reasons for continued use of white snus were not explicitly stated by the participants, the interviews revealed various factors that contribute to the maintenance of the behaviour. As previously mentioned, marketing strategies, advertisement, and the novelty appeal (new flavours) of white snus all play a role in sustaining its desirability and
dependency. For example, most participants did express that they had bought a different type of white snus than the one they usually purchase only to try a new flavour. The subtheme of "continuum," which was identified from the data, elucidated how switching the strength of white snus occurs logically: Once a nicotine tolerance is developed, individuals can increase the strength of the product by purchasing the same product with more dots, which represent different strength levels. Furthermore, many participants reported buying new packs of white snus to try new flavours or sampling different flavours from their friends, contributing to the maintenance of the behaviour. White snus companies introduce a vast array of flavours gradually, including "limited editions" that vary throughout different seasons of the year, further sustaining the behaviour. Participants noted that new flavours are frequently tested on social media and advertised by influencers. This increases their exposure to white snus advertisement even if it does not originate directly from the different brands of white snus. Despite regulations stipulating that persons under the age of 25 should not be exposed to white snus advertisement, most participants had been exposed to it. Influencers often collaborate with white snus brands, and any person following them on social media can see these partnerships. It might be challenging for influencers to consider the age of each follower when collaborating with a brand, and stricter regulations on white snus advertisement overall may be a solution to this issue.

### 6.1.3 Quitting the use of white snus

In this study, participants were asked about their future intentions of using white snus and reasons for quitting. Financial concerns emerged as the main motivator to quit among the participants. Although they did not express any current financial concerns regarding their white snus consumption, they believed that it could be an issue in the future. This was surprising, as they are likely to be in a more stable financial position in five years than what they are currently. This could suggest that they feel a sense of financial freedom and lack the immediate responsibility to manage their money carefully. However, as they transition into adulthood, they may recognize the importance of making more discerning choices about their spending habits. This suggests that a price increase of white snus or limiting the governmental allowance on certain products might be an effective incentive for individuals to quit, especially since most high school students in Sweden rely on government allowances to afford purchasing it.
Most interviewees did not know what effects nicotine can have on health despite saying that they knew that it was not good for them. Only three participants expressed willingness to quit due to health reasons. However, as research progresses and more information about the negative effects of white snus on health becomes available, it is possible that more individuals may be motivated to quit. Alongside developing our understanding of the harmful effects of nicotine, efforts must be made to ensure that this is communicated properly to the public, especially as the results indicated that many participants did not have a clear idea of the harmful effects nicotine could have on their health.

Stricter regulations on white snus, such as creating "nicotine-free" zones in schools, were found to make the consumption of the product more difficult, but they were not seen as motivators to quit, since the participants expressed that they used it more secretly. Therefore, a stricter enforcement of the no-nicotine policy could help not to normalise the consumption of white snus among adolescents. Nonetheless, a combination of factors such as financial concerns, concrete information on the negative effects of white snus on health, difficulty accessing the product, and "nicotine-free" policies may drive adolescent females to consider quitting their use of white snus.

6.2 Discussion of the results in relation to previous research

The results emphasised the crucial role of peer influence in both initiating and continuing the use of white snus. These findings are consistent with previous research on smoking by Kobus (2003), who explained the significance of peer relationships in influencing an individual's likelihood to engage in smoking. It is imperative to further examine how adolescents are socialized to consume white snus.

During the recruitment process, it was observed that friend groups in which one member reported never using white snus, all other friends also reported never using it. This finding supports Kobus's (2003) claim that adolescents who engage in certain behaviours tend to be surrounded by peers who also engage in those behaviours. In addition, the interviews revealed that almost all participants were introduced to white snus by a friend. Trying white snus for the first time was perceived as a bonding experience between friends, a rite of passage. The pressure to try white snus seemed to be more subtle and internal, as demonstrated by the subthemes of “bonding experience”, “influence from friends”, and “choice”.
In the background section, the "weighting principle" by Lund and Vedoy (2021) was introduced, which suggests the importance of considering the broader context when exploring the negative health effects of white snus. The consumption of white snus represents a relative health improvement if the users used to be smokers. However, the thesis's topic was chosen due to a report from 2021, which revealed that many adolescents who tried white snus had never tried anything else before. In this case, the consumption of white snus represents an increased risk for poorer health due to the harmful effects of nicotine.

As one of their points was that more research is needed, Patwardhan & Fagerström (2022) proposed that it would be insightful to investigate the likelihood of the unintended use of white snus in the population and whether the white snus consumption among adolescents could serve as a gateway to other tobacco products. Based on the findings of this thesis, it did not come across that white snus served as a gateway to other tobacco products. Interestingly, a few participants explained that they used white snus to quit smoking, and only three of the participants had never tried anything else before white snus, which contradicts the findings from the CAN report of 2021.

Overall, these findings highlight the crucial role of peer influence in female adolescents' use of white snus and the need for further research on socialization factors. The study also adds to the ongoing debate on the health risks associated with white snus consumption, given that some participants used it as a cessation aid for smoking.

In the present study, parental influence appeared to affect the consumption of white snus among adolescents. Specifically, the theme of "hindrances" revealed that some parents were not only aware of their children's use of white snus but also facilitated it. It is crucial to uphold these obstacles to avoid the normalization of white snus consumption among adolescents and limit their access to the product. For instance, if a parent stopped buying the product or if the product’s price increased, it is possible that the participant may consider quitting, given that financial concerns were identified as the primary motivator for quitting among the interviewees. Additionally, perceived self-efficacy plays a crucial role in influencing health behaviour, as highlighted by Bandura (1986). When it comes to adopting health-promoting habits, like the decision to quit using white snus, it is essential to believe in one's capability to succeed. Without this belief, individuals are unlikely to commit themselves to the necessary efforts. Therefore, a significant factor in motivating adolescents to quit using
white snus is the development of a comprehensive, step-by-step plan for the quitting process. Making this information readily accessible to those who may not actively seek such guidance is also important.

**Figure 4.**
*Consumption of white snus based on the Reciprocal Determinism Model (cf. Smith, 2021)*

### 6.3 Strengths and limitations:

There are several limitations to this study that should be considered. Firstly, the research aim was based on data from the CAN national school survey from 2021, which showed a significant difference in the consumption of white snus between young females and males. However, an updated report based on the surveys collected in 2022 was published during the writing process of this thesis and indicated that the consumption of white snus among adolescent boys had also increased compared to the previous year.

It is important to note that the CAN national school survey (2021) indicated the highest consumption of snus among females since 1974, despite the potential limitations of this thesis. It is also worth noting that both surveys (CAN, 2021; CAN, 2022) were conducted before the implementation of the new law in August 2022, which raised the age limit for purchasing white snus from 15 to 18 and banned marketing of the product to individuals under 25 years old (SFS 2022:1257). As a result, the data from the CAN national school surveys do not reflect the possible impact of the new law on the consumption of white snus among the targeted group. Once the CAN national school survey of 2023 is published, it will be highly
intriguing to observe the extent to which the law has influenced the consumption of white snus. Recognising that the targeted age group is prohibited from purchasing white snus, it is understood that participants may have been hesitant to divulge extensive details during interviews. Moreover, it is important to acknowledge the influential role of the author in the research process, as the author's involvement is inseparable from the study and can impact data collection and analysis. In this study, the fact that the interviewer was a young woman could be considered a strength, as the participants may have identified with her and felt more comfortable talking about their experiences with white snus. Creating a safe environment for participants to share their thoughts and feelings is crucial in both quantitative and qualitative research, and the researcher's background and characteristics can play a significant role in this (Brinkmann, 2007). However, it is also important to acknowledge that the interviewer had limited experience in conducting interviews, which may have affected her neutrality and interviewing techniques. This is a noteworthy limitation of the study, as researchers conducting qualitative studies need to be aware of their potential influence on the participants and take steps to minimize it (Brinkmann, 2007). Future research could benefit from exploring the impact of the researcher's characteristics on participants' responses and investigating ways to enhance interview skills and techniques to improve the quality of data collected.

There were also limitations to the methods used in this thesis which should be acknowledged. The study's sample only included adolescent females who regularly consumed white snus, limiting the generalizability of the findings to other populations. A broader research aim that examined the consumption of white snus among all adolescents would have enabled a more in-depth investigation of gender differences that have been observed. With this in mind, results from qualitative research are rarely representative and difficult to generalise. Finally, while longer interviews would have been preferable, the interviewees did not talk as openly as the researcher had expected and often provided short responses despite the attempts to encourage them to elaborate. Although the interviewer allowed for silences in the hope that this would prompt the participants to elaborate their answers, this was not always successful. A larger dataset would have compensated for the lack of detail in some of the interviews. This limitation suggests that the findings of the study should be interpreted with caution, as they may not fully capture the range and complexity of participants' experiences and perspectives regarding white snus use.
The projection of future behaviour was a crucial aspect of the interviews conducted in this study. Participants were asked if they anticipated using white snus five years from now and what factors would motivate them to quit. The majority of participants expressed the belief that they would not continue using white snus in the future, naming financial concerns as a primary factor for cessation. These findings suggest that financial considerations may be a key factor in reducing adolescent white snus consumption in the long term. However, due to the cross-sectional nature of the study, it is difficult to determine whether these projected behaviours will actually be accomplished. Therefore, future research could benefit from conducting a longitudinal qualitative study that follows up with the same participants over time to explore potential changes in their consumption patterns and identify the factors that contribute to these changes. Such research could provide a more nuanced understanding of the factors that influence adolescent white snus use and cessation over time.

As shown by the study's findings, the participants demonstrated a limited understanding of the potential health impacts of nicotine consumption. It would be of interest to explore this topic further in a subsequent study, particularly in light of the new regulations mandating clearer displays of health hazards on products containing nicotine. Such a study could provide valuable insights into how these new regulations are perceived and whether they have an impact on adolescent behaviour regarding nicotine use.

6.4 Implications for public health

Throughout this thesis, it has been consistently highlighted that white snus carries potential implications for public health. Consequently, it is crucial for governments to take proactive measures in addressing this concern by implementing policies that regulate the production and sale of white snus. Such actions are essential to safeguard the well-being of their citizens. This thesis has contributed to enhancing our understanding of the motivations underlying white snus consumption among female adolescents. With this in mind, it is crucial to maintain a nuanced perspective on white snus consumption in relation to risk behaviour. This study emphasises that white snus should be considered as a risky behaviour only within the context of individuals who would not have otherwise consumed other tobacco products. However, it is noteworthy that when used as a strategy to quit smoking, for instance, white snus can be viewed as a risk reduction measure. Nonetheless, it is important to emphasize that the optimal choice remains abstaining from all tobacco and nicotine products altogether. By recognizing
these distinctions and promoting a comprehensive understanding of the potential risks and benefits associated with white snus consumption, policymakers, public health practitioners, and individuals themselves can make informed decisions that prioritize overall well-being and contribute to the advancement of healthier behaviours in the realm of tobacco use. The insights gained from this research can guide governments in formulating early interventions and preventive measures to reduce the likelihood of adolescent addiction. The findings from the interviews shed light on factors that can help prevent dependency among adolescents who would otherwise abstain from using any tobacco products, as well as identifying influential factors that could motivate them to quit. Therefore, governments should be proactive in addressing this issue and implement policies to regulate the production and sale of white snus to protect the health of their citizens.

Conclusion

In conclusion, this explored the intricate realm of Swedish female adolescents' white snus consumption, aiming to unravel the underlying social and environmental factors that drive this behaviour. By employing the RDM as a theoretical framework, the study analysed the findings, the identified themes, through the lens of this model. Notably, the subthemes discovered during the research were situated within the three fundamental levels of the RDM: personal-, social- and behavioural factors. This comprehensive approach sheds light on the dynamic interplay among these factors throughout the entire process of white snus initiation, continued use, and cessation. By unravelling the complex web of influences surrounding Swedish female adolescents' white snus consumption, this study hopefully could contribute to a deeper understanding of the multifaceted factors that shape their behaviour in this particular context. These insights can guide the development of targeted interventions and strategies to promote healthier choices and ultimately improve public health outcomes among the population.
Declaration of AI-assisted technologies

The author declares that ChatGPT has been used during the preparation of this thesis to translate quotes, and for proofreading purposes to improve the readability of some passages. While ChatGPT played a supportive role, the primary content, analysis, and intellectual contributions of this thesis are the result of the author's own knowledge, research, and critical thinking.
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Appendices

Appendix A

Information sheet for participants.

Informationsbrev deltagare

I det här dokumentet hittar du information om studien: "To snus or not to snus: Female adolescents’ experience of white snus" ("Att snusa eller inte snusa: kvinnliga tonåringars erfarenheter om vitt snus."). Informationen riktar sig till dig som uppfyller följande tre kriterier:

- Identifierar som kvinna
- Är mellan 15 och 18 år gammal
- Använder/har använt vitt snus regelbundet (minst varje vecka)

Bakgrund till studien

De senaste åren har snuskonsumtionen bland unga ökat drastiskt. En av anledningarna bakom detta är att så kallat "vitt snus" har blivit alltmer populärt. Enligt Folkhälsomyndighetens senaste rapport om bruk av tobaks- och nikotinprodukter är användning av vitt snus vanligast bland unga kvinnor. I min studie vill jag utforska olika anledningar bakom detta och skulle vilja veta mer om hur just unga tjejer ser och tänker kring vitt snus.

Om uppsatsen

Inom ramen för Master uppsatsen genomförs intervjuer med tjejer mellan 15 och 18 år som snusat eller har snusat vitt snus. Deltagandet i studien är frivillig. När studien skrivs kommer ditt namn inte att framstå. Om du uppfyller dessa kriterier och är intresserad av att delta i studien får du gärna fylla i intresseformuläret nedan eller kontakta mig (kontaktuppgifter finns slutfat av dokumentet):

https://forms.gle/KaQ7bcCTaBKj3xf2L9

Masteruppsatsen skrivs vid institutionen för Folkhälsosvetenskap vid Stockholms universitet med följande handledare:

-Jenny Cineros Ornerg, Docent/Universitetslektor
-Lena Eriksson, Universitetslektor
-Tuulia Lerkkanen, Doktorand

Om du har frågor eller vill ha ytterligare information om studien så får du gärna kontakta mig!

Linnéa Rostang (072-4486983)
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Department of Public Health Sciences
Appendix B

Interview guide.

Intervjuguide*:

Inledning


- Intervjun kommer ta ungefär 25 minuter
- Den är helt frivillig och du har rätt att avsluta intervjun när du vill och utan anledning, det är bara att säga till.
- Har du några funderingar eller frågor innan vi börjar med intervjun?

Frågor angående deltagarens egen snusanvändning och kontext (initiering och motivering)

- Skulle du kunna berätta lite om första gången du provade vitt snus? (ålder, kontext)
- Snusar du fortfarande? Hur gammal är du?
- Hur ofta skulle du säga att du snusar?
  ➔ om deltagaren har slutat att snusa: när, varför och vad hjälpte dig att sluta?
- Varför snusar du?
  - Innan du provade vitt snus, hade du också provat ”vanligt” snus eller cigaretter?
  - Ser du annorlunda på ”vanligt” snus och vitt snus?
  - Om du inte snusade, tror du att du skulle använda något annat?
  - Kan du berätta lite om vilket snus du använder? T.ex vilket märke, vilken smak, vilken styrka osv.
  - Sedan du började snusa, har du ”trappat upp” styrkan av snusset jämfört med när du började snusa?
  - Hur brukar du få tillgång till snuset?
  - Hur har du råd med snusset?
  - Vet dina föräldrar om att du snusar?

Frågor angående deltagarens tankar kring snus

- Har du någonsin funderat över möjliga konsekvenser när det gäller användning av vitt snus, t.ex när det gäller hälsa.
om deltagaren svarar ja: kan du berätta mer om detta?

- Har du någonsin köpt en snusdosa bara för att "testa en ny smak"?
  → Om ja: varför?
  → Vad tycker du om de olika smakerna som finns?

Frågor kring snusanvändning i deltagarens sociala umgångar

  → Om ja: varför? Berätta gärna mer!
- Får du reklam för vitt snus ibland? T.ex i sociala medier, poddar, influenceders osv.
- Hur tänker du kring reklam om snus?
- Hur påverkar andras snusande dig?
- När folk omkring dig pratar om vitt snus, vad brukar de säga?

Avslutningsfrågor

- Om du tänker på dig själv om 5 år, tror du att du fortfarande snusar då?
- Har du någonsin tänkt på att du skulle vilja sluta?
  → Om deltagaren svarar att de skulle vilja sluta: vad skulle vara din största anledning?
  → Om nej: varför inte?

Nu är intervjun klar. Är det något som vi inte har pratat om som du skulle vilja lägga till eller har du några frågor?

Tack för ditt deltagande!

Om deltagaren har uttryckt att de vill sluta:

Om du känner att du skulle behöva stöd kring att sluta snusar hittar du bra information på Umo.se "Att sluta snusa": https://www.umo.se/tobak-alkohol-droger/snusning/att-sluta-snusa/

*Frågor markerade i fet text anses vara viktigaste.