Aalto University

School of Science

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Pekka Siika-aho

Persona Creation Based on Secondary Data: A Study on Perceived Reliability in UX design

Master's Thesis

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Supervisor:	Professor Marko Nieminen
Thesis advisors:	Sami Vihavainen, D.Sc. (Tech)
	Hanna-Riikka Sundberg, D.Sc. (Tech)

Author	Pekka Siika-aho
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Abstract

While personas are a widely used tool in the UX industry, they are expensive and time-consuming to create. This study examines utilization of secondary data as a less resource and time-consuming method for creating personas. Typically personas have been created from qualitative data that is gathered specifically for persona creation. By using secondary data, the time for user research can potentially be reduced thus bringing down also the cost and time needed to create the personas.

In this study, personas were created based on secondary data available from public sources. The personas were then evaluated qualitatively by UX designers on their perceived reliability. Prior to this study, UX designers' perceived reliability of personas created on secondary data hasn't been studied.

The results convey that using secondary data can be useful with some limitations related to the creation of personas and how designers interpret them. Five recommendations for increasing the perceived reliability of secondary data personas were found. 1) While the main data used should be of high quality, other data sources should be used to support the persona creation. 2) When creating persona descriptions, creative freedom should be allowed, but divergence from data should be clearly indicated. 3) The level of detail in persona descriptions should be balanced between providing enough details to make the personas relatable and providing too much detail and conflicting with UX designers' assumptions and previous experience. 4) The background data and research and analysis methods used in persona creation should be made transparent. 5) Finally, designers should be aware of their own bias and assumptions when using personas.

To conclude, the primary finding of this study is that when the drawbacks of secondary data are taken into account, using secondary data personas can be a valuable tool in a design process and they can help UX designers in their work.

Keywords	persona, secondary data, ux methods

I

Tiivistelmä

Persoona on laajalti käytetty työkalu UX-suunnittelussa. Niiden luonti on kuitenkin kallista ja työlästä. Tämä diplomityö tutkii toissijaisen datan käyttöä halvempana ja vähemmän työläänä tapana luoda persoonia. Tyypillisesti persoonat on luotu erityisesti persoonia varten kerätyn laadullisen datan pohjalta. Käyttämällä toissijaista dataa voidaan mahdollisesti vähentää käyttäjätutkimukseen käytettyä aikaa ja resursseja.

Tässä tutkimuksessa luotiin persoonat julkisista lähteistä kerätyn toissijaisen datan pohjalta. Laadullisissa haastatteluissa UX-suunnittelijat arvioivat luotujen persoonien koetun luotettavuutta. UX-suunnittelijoiden koettua luottamusta toissijaisen datan pohjalta luotuja persoonia kohtaan ei ole tutkittu ennen tätä tutkimusta.

Tulokset viittaavat siihen, että toissijaisen datan käyttö voi olla hyödyllistä, ottaen huomioon tietyt rajoitukset liittyen persoonien luontiin ja suunnittelijoiden tulkintaan. Tutkimuksessa löydettiin viisi suositusta, joilla persoonien koettua luotettavuutta voidaan parantaa. 1) Pääasiallisten datalähteiden tulee olla korkealaatuisia, mutta muitakin datalähteitä tulee käyttää tukemaan persoonien luontia. 2) Persoona-kuvausten luomisessa tulee käyttää luovuutta, mutta poikkeamat taustadatasta tulee indikoida selvästi. 3) Yksityiskohtien taso tulee tasapainottaa siten, että saavutetaan riittävä määrä yksityiskohtia, jotta persoona on uskottava. Samaan aikaan yksityiskohtien määrä ei saa olla liian suuri, jottei persoonassa ole liikaa mahdollisuuksia ristiriitaisuuksiin UX-suunnittelijan aiempiin kokemuksiin ja oletuksiin. 4) Persoonien luomisessa käytettyjen taustadatan ja tutkimus- ja analyysimenetelmien tulee olla läpinäkyviä UX-suunnittelijalle. 5) UX-suunnittelijoiden tulee olla tietoisia omista ennakkoasenteistaan ja –oletuksistaan käyttäessään persoonia.

Tutkimuksen pääasiallinen löydös on se, että, kun toissijaisen datan varjopuolet otetaan huomioon, sen pohjalta luodut persoonat voivat olla arvokas työkalu suunnitteluprosessissa ja auttaa UX-suunnittelijoita työssään.

Avainsanat	persoona, toissijainen data, ux metodit

Acknowledgements

Table of Contents

1 Introduction

The goal of this thesis is to find less resource and time-consuming method for creating personas. Personas are a widely used tool in the UX industry (Matthews et al., 2012; Nielsen and Storgaard Hansen, 2014). Personas are composite archetypes based on behavior *patterns uncovered during research (Cooper et al., 2014; Mulder and Yaar, 2007; Pruitt and Adlin, 2006). They have become common tools for formalizing user research to help making product design decisions. They are used to make the results of user research memorable, engaging, and more actionable as a goal for UX design (Pruitt and Adlin, 2006).

One of the challenges of using personas is that their creation requires a lot of time and resources. Forrester report (as cited in Miaskiewicz et al., 2008) found that average persona investment is about 47 000 US dollars. Persona creation can also require significant amounts of effort, in the order of magnitude of months (Pruitt and Grudin, 2003).

It has been suggested that secondary data could be a remedy for persona creation when primary data is not easily available (Cooper et al., 2014; e.g., Pruitt and Adlin, 2006). Collection of secondary data can in some cases be less time consuming and cheaper than performing user research (Pruitt and Adlin, 2006). However, there has been little research on how the use of secondary data affects the created personas and the designers' opinion of the personas.

In this study, personas are created based on secondary data, adapting a persona creation process from the literature, and to explore their value as design tools, they are evaluated by UX designers using an interview and a design task. In the context of this study, the interviewed UX designers have experience both in user research and product development. Thus in this study, UX designers can function as expert evaluators of the created personas from two viewpoints: as a user of persona and as an evaluator of persona method use. This study aims to create new understanding on how UX designers perceive the persona created based on secondary data.

The objective of the study is to see whether UX designers perceive personas based on secondary data as a reliable design tool that could be valuable in design work. In this study, UX designers evaluate the created personas by using them in a design task and then reflect on their use in an in-depth interview. If the created personas are perceived as a valuable design tool, personas created based on secondary data can be used in the industry, decreasing the cost and time needed to create personas.

The context of this thesis is a European Union funded Multi-Platform Application Toolkit (MPAT)[1] project that focuses on the emerging possibilities of Hybrid TV (HbbTV) for content producers. The aim of the project is to create a new software product, an authoring tool for the creation of interactive multimedia applications. The project has eight participating organizations spread in seven European countries. The personas in this study were developed to understand television consumers in the EU area. In the context of this study, performing comprehensive user research would require dozens of interviews across Europe. Thus, the need for cheaper and less time-consuming persona approach is apparent.

In a broader context, the findings of this study can inform software product development in general.

1.1 Research questions

The overall question for this thesis is: can personas created from secondary data be useful design tools. More specifically,

1. How does the use of secondary data affect the creation of personas?
2. How do UX designers evaluate the reliability of a persona?
3. How do UX designers perceive reliability of personas based on secondary data?

The first research question explores how the use of secondary data affects the created personas. The persona literature is studied for best practices and processes for creating personas based on secondary data. Based on the findings, the personas are created for further study.

The second research question tries to understand the process how of UX designers evaluate the reliability of a persona. The third question looks for different features affecting the UX designers' perceived reliability of personas based on secondary data. The second and third question are studied by interviewing UX professionals and asking them to use and evaluate the personas created in answering the first research question.

1.2 Approach

This study is set in the context of HCI research and in the broader context of design science for information systems. It follows the guidelines provided by Hevner et al. (2004) for performing research in IS design science.

This study produces *an artifact instantiation*, the created personas, to answer the *business problem* of generating personas faster and cheaper in industry use. The

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[1] http://www.mpat.eu/

artifacts are *evaluated* by UX designers to see if they are perceived as valuable design tool. Their reactions to the personas are studied to generate *research contributions* to the persona literature. The study of personas has been exhaustive, but the business practicalities of time and resource constraints support the need for more research on the UX designers' reaction to the use of secondary data in persona creation.

The study applies *research rigor* to both creation of personas and to their evaluation. The theories from persona creation literature are adapted to the creation of the personas. This study contributes to the wider *search process* for effective persona tool utilization by providing one design solution in the problem space. Finally, this study aims to *communicate its findings* in a way that contributes to both the academic and business-oriented audiences. It makes recommendations for persona applications in the industry and suggests new directions for research for personas.

This study uses in-depth semi-structured interviews with UX designers to evaluate the created personas. Semi-structured interviews are well suited for building understanding of practices and attitudes of people interacting with developed prototypes (i.e. the created personas), generating deep understanding of the problem domain. They provide opportunities to gain additional insight and understanding, that isn't apparent before conducting the interviews. (Lazar et al., 2010)

1.3 Structure of the thesis

Chapter 1, which is this introduction, presents the motivation for this thesis and the research questions. Chapter 2 presents the relevant literature on personas. Chapter 3 describes the methodology of this study. Chapter 4 presents the created personas and the findings from the evaluation interviews. Chapter 5 discusses the implications and the limitations of the study and concludes with topics for further research. The contents are summarized in Table 1.1.

Chapter	Topic
Chapter 1	Introduction and motivations
Chapter 2	Persona literature
Chapter 3	Methodology
Chapter 4	Created personas and findings from interviews
Chapter 5	Discussion, implications and future research

Table 1.1 – The structure of the thesis

2 Personas

This chapter presents the literature on personas. First the context of persona method use is presented in Section 2.1. Second, and overview of the persona method is given in Section 2.2. Third, the claimed benefits and criticism of personas are reviewed in Sections 2.3 and 2.4. Fourth, the literature on the data and process used for creation are described in Sections 2.5 and 2.6. Finally, the Chapter concludes with evaluation of the research problem in the light of the literature review in Section 2.7.

2.1 The contextualization of the persona method

As stated earlier, persona method is widely used tool in UX industry (Matthews et al., 2012; Nielsen and Storgaard Hansen, 2014). In broader context, they are used as a part of product development effort. Next the context of using persona method is explored through case examples from the literature. The cases examined here are described individually in Table 2.1.

The personas were presented as a method for reporting user data in new software product development in The Inmates Are Running the Asylum by Cooper (1999). Out of the five cases presented here, in four the personas were used for developing new software or web services (Antle, 2006; Bødker et al., 2012; Guo and Razikin, 2015; Meissner and Blake, 2011) and in one they were used to support prototype development for new services (Eriksson et al., 2003).

In the presented cases, the personas were used to help the development team understand user who were either distant or to whom the development team had limited access to. In the cases of Meissner and Blake (2011) and Guo and Razikin (2015) the users were culturally, linguistically or geographically distant from the development team. In Antle (2006), the users were young children whose world view can be hard to relate to and the development team had limited access to the children. In Bødker et al. (2012) and Eriksson et al. (2013) the users were spread over large geographic area area and in Eriksson et al. (2013) the access to users was also limited based on confidentiality issues when dealing with users.

In two cases the development team was geographically dispersed. In Eriksson et al. (2013), the organization itself was spread throughout Sweden and in Bødker et

al. (2012), the development was done in collaboration of multiple companies operating across Denmark.

As indicated in the introduction, the context of this study was in a EU project, MPAT, with the users and the participating organizations geographically spread across Europe. Based on the similarities to there case studies presented here, the use of persona method can be deemed appropriate in the context of this study.

Case	Goal	Challenges for product development
Antle (2006)	Development of a new web service for a broadcasting company	– Limited access to users – Children as users – Short development timeline
Meissner and Blake (2011)	Development of a new website for an NGO trying to find jobs for youth	– Culturally distant users – Linguistically distant users
Bødker et al. (2012)	Development of new government web services	– Multiple companies involved in the development – Large and diverse user population
Eriksson et al. (2013)	Development of new prototypes	– Widespread organization – High workload – High secrecy, limiting access to users
Guo and Razikin (2015)	Development of a new software product	– Geographically distant users – Culturally distant users

Table 2.1 – Examples of use cases for persona method

2.2 Definition of persona method

Until recently, much of the literature on benefits of personas came from popular literature. This often advocates the use of personas and gives directions on how to implement the persona design process in organizations (Putnam, 2010). There is still a lack of research that studies the success of the persona method in practice (Nielsen and Storgaard Hansen, 2014). That said, there is a lot of practical literature (Cooper et al., 2014; e.g. Mulder and Yaar, 2007) and academic case studies (Guðjónsdóttir and Lindquist, 2008; e.g. Pruitt and Grudin, 2003) that provide positive experiences in using personas as part of design process.

Personas are composite archetypes based on behavior patterns uncovered during research (Cooper et al., 2014; Mulder and Yaar, 2007; Pruitt and Adlin, 2006). They are tools for formalizing user research for informing the product design.

While user representations have been used for a long time, for example, Dreyfuss's work in the 1950s (Dreyfuss, 2003), their use in user-centered design picked up in the early 1990s (Pruitt and Adlin, 2006). Persona as a term and format for user representations was introduced by Alan Cooper in the 1999 (Cooper, 1999). Since his book, personas have been subject to much discussion, debate and further development. He later developed the method further in Cooper et al. (2014) and its earlier editions.

Pruitt and Grudin (2003) and Pruitt and Adlin (2006) later expanded persona method from Cooper's early work. Their main addition was the use of quantitative and qualitative data during research, before persona creation. For Pruitt and Adlin (2006) the primary focus of personas might vary depending on the circumstances. Their personas are derived from differences in user groups, segments, and goals.

A different approach to personas is Lene Nielsen's engaging personas. She first presented the engaging personas in 2004 (Nielsen, 2004) and later expanded it in 2013 (Nielsen, 2013). She focuses more on the narratives of personas to bring them to life and help them engage the designers more. Her critique to the goal oriented personas is that the characters are often flat or one dimensional, and are not relatable. She borrows from film writing literature to help flesh out the persona characters to be rounded and relatable.

2.3 Benefits of persona use

Based on the literature review, four main benefits of using personas were identified. First, the personas help to focus the design effort to specific users and their needs. Second, the personas aid in communication within the team and the stakeholders. Third, they make implicit assumptions of users explicit. Fourth, they bring empathy to the design process.

Personas bring focus to product development effort (Pruitt and Adlin, 2006). In a study of persona experts, the added focus in product development has been found the most important benefit of personas (Miaskiewicz and Kozar, 2011; Putnam, 2010). Implementing personas in the design process helps designers focus prioritize and limit the product feature set. As one expert in Miaskiewicz and Kozar (2011) said: 'A persona helps project teams answer two fundamental questions: who are we solving for and who are we not solving for?'.

Pruitt and Adlin (2006) describe the value of focus and limitations in design in the following way. In product development cycle, there is typically a multitude of feature ideas in the beginning. The resources are limited and it isn't possible to build every feature and more importantly, building every feature would result in a product that would satisfy no one. Personas define a tight domain, where user's

needs guide the product and feature decisions, leading to a product that better matches user's needs and leads to higher user satisfaction. This is supported by the experience of persona use (Miaskiewicz and Kozar, 2011; Pruitt and Grudin, 2003) where they see great benefit in the way that personas help making the otherwise nebulous and abstract product decisions explicit and related to user research.

Since their introduction by Cooper (1999), personas have been an aid of communication both within the team and with project stakeholders. Personas help develop a common language about the users (Pruitt and Adlin, 2006). This helps in communication within the design team. The designers know that they are speaking of the same things and have a common vocabulary for different user needs. Personas also help to communicate the user needs to stakeholders outside the design team (Pruitt and Grudin, 2003).

Product development often happens in teams of multiple people. The teams may involve for example designers, developers, business owners and subject matter experts. Personas help product design team share the language they use about their users. 'User' can mean different things to different people and the meaning may vary depending on the situation (Pruitt and Adlin, 2006). Personas make the language concrete. Instead of undefined 'user', the discussion can focus on a certain persona with a defined set of characteristics (Cooper et al., 2014).

In relation to improved communication within the design team and shared vocabulary about the user, personas creation process also forces design team to voice their implicit assumptions about the user, making them explicit (Pruitt and Adlin, 2006). Designers often have internal assumptions about users that guide their decision making. By employing personas in the design process, designers have to re-evaluate their assumptions (Miaskiewicz and Kozar, 2011; Pruitt and Grudin, 2003).

The experience of Pruitt and Grudin (2003) is that without personas, development teams make product and feature decisions without recognizing or communicating their internal assumptions. The development team's own favorite ideas might not be what the user actually needs. Using personas forces them to re-evaluate the features based on real user needs. This is mirrored in Cooper et al. (2014), where it is claimed that personas help avoid self-referential design, i.e. when development team projects their own goals, motivations, and skills to the user, based on the assumption that the user is similar to themselves. Designers that use personas extensively put challenging assumptions about users as one of the main benefits of personas (Miaskiewicz and Kozar, 2011).

Personas are a way of humanizing large collections of data and user research to a format that is easy for designers to relate to and empathize with (Pruitt and Grudin, 2003). Putting themselves in the position of the user, helps designers better understand what user's wishes in a certain situation are and how they will use the product (Nielsen, 2013). The empathizing aspect of personas is taken furthest by Nielsen (2013), who employs film writing techniques to write engaging persona descriptions with rich characters and narratives to help designers better relate to personas.

2.4 Criticism of personas

Within the existing literature, the main criticism of personas is the lack of scientific evidence for the claimed benefits of personas. Persona literature is largely based on practice and anecdotal evidence. Still, the persona method has gained wide popularity and is an established method in UCD.

Pruitt and Adlin (2006) list four main reasons for failure in projects with persona approach:

– The persona effort isn't accepted or supported by the leadership
– The personas are not credible and not associated with methodological rigor and data
– The personas are poorly communicated
– The product design and development team do not understand how to use them

In literature, there are examples of failed persona projects which support their arguments.

In the case of Rönkkö et al. (2004), the failure was not for professional reasons that the personas were not implemented. Instead, the project failed to recognize the patterns of dominance in the development process. It was not enough to get interaction designers, developers, marketing and sales and management on board to the process. The real power groups were outside of the company in different stakeholders. For different reasons the constellations of stakeholders could not be convinced to accept personas as a driving design tool and hence the persona project was abandoned. In relation to Pruitt and Adlin (2006), the support of leadership is not enough, but also the real power groups need to support the persona process.

In the case of Blomquist and Arvola (2002) personas were used in a project, but they were not deeply implemented in the design process. They list a number of reasons for the failure of personas in the project: interaction designers were new to the personas and did not know how to use them, the personas were not part of the project communication since beginning and the interaction designers did not trust the primary persona. They had not been part of its creation and did not know which parts were assumptions and which were based on empirical evidence. This supports the last three reasons for persona failure listed by Pruitt and Adlin (2006).

Matthews et al. (2012) found that it could not be assumed that even experienced designers would know how to properly implement the persona method without specific training. The designers who had received training for using and creating personas were a lot more enthusiastic about personas than the designers without training. The designers with persona training background used them in their work extensively. This finding is supported by Nielsen and Storgaard Hansen (2014), where the only negative experience of using personas came from a company that did not understand when in the product development process the personas should be used. The need of persona method experience or training is

highlighted also in cases of Blomquist and Arvola (2002) and Gudjónsdóttir (2010).

Some of the benefits of personas have been under criticism. For example, Turner and Turner (2011) argue that contrary to Cooper (1999) and other persona proponents, stereotypes are almost an inherent part of personas. Also in her study of designer practices, Putnam (2010) did not find evidence to support the claims that personas increase empathy of end users in designers.

Massanari (2010) argues that personas are implicitly political and simplify users. Persona methods incorporate persona communication as a critical factor of persona process (e.g., Cooper et al., 2014; Nielsen and Storgaard Hansen, 2014; Pruitt and Adlin, 2006). The methods are by their nature persuasive and used to communicate designers' vision of the user to the organization. He further argues that personas result in oversimplification of users, making the users subjects of design and constricts user behavior. Massanari (2010) argues that this goes against the UCD's central goal of user centricity.

In similar vein Turner and Turner (2011) argue that while Pruitt and Adlin (2006) and Cooper et al. (2014) argue that personas help designers avoid stereotypes, the persona method actually very likely leads to stereotyped users. Putnam (2010) agrees that personas do not prevent designers in avoiding ill-informed assumptions. Turner and Turner (2011) argue that stereotyped personas appear to constrain design and persona use, and form an obstacle for good design. However, they continue that stereotypes are "often disconcertingly accurate." Pruitt and Adlin (2006) agree that stereotypes can lead to simplified user representations but argue that stereotypes can also be very powerful communications tool. Their conclusion is that stereotypes should only be used with care and by acknowledging their risks.

In the literature, personas have been criticized for overly optimistic benefits and lack of scientific basis for the claims. The critique presented here should be taken into account when creating and using personas.

Despite the criticism, personas have evolved into a widely used UCD method (e.g., Matthews et al., 2012; Nielsen and Storgaard Hansen, 2014). Many argue that personas are not a panacea for involving users in the design process, but one of the many possible methods with its own pros and cons (e.g., Pruitt and Adlin, 2006; Turner and Turner, 2011).

2.5 Data for persona creation

Data for personas can come in various forms and from various sources. Adapting and combining classifications of Pruitt and Adlin (2006) and Cooper et al. (2014) I divide data along two axes.

Data used for persona creation can be either qualitative or quantitative and secondary or primary. The difference in qualitative and quantitative data is on collection methods of the data. Primary data is collected from primary users in

the context of the product the personas are designed for. Secondary data is data that is related to the users or the product but is not primary data.

These two axes produce four different types of data that can be used for persona creation. Table 2.2 presents the different data types and examples of research methods that produce them. Next, I will describe the different data types.

	Qualitative data	Quantitative data
Primary data	User interviews Contextual inquiry User observations	Product usage data Market segmentation analysis User surveys
Secondary data	Scientific literature review Subject matter expert interviews	Census data on user population Existing survey response data Scientific research review

Table 2.2 – Examples of different data type sources

2.5.1 Primary qualitative data

Primary qualitative data is qualitative data that is collected from the users in the context of the product the personas are designed for. Primary qualitative data can be gathered from e.g. user interviews, user observations or contextual inquiry (Cooper et al., 2014).

Primary qualitative data is good for examining the use context in depth and gaining new understanding of a problem (Cooper et al., 2014; Nielsen and Storgaard Hansen, 2014). Its main disadvantage is that it is time and resource intensive, which can lead to less representative data (Mulder and Yaar, 2007; Nielsen and Storgaard Hansen, 2014). Because of the resource intensiveness, usually, the goal of the primary qualitative research is to get a deep understanding of users, instead of broad understanding.

Most of the persona literature focuses on the use of primary qualitative data. According to Cooper et al. (2014), primary data in persona research should be primary qualitative data as it helps understand the how and why of user behavior in higher detail than quantitative data. Pruitt and Adlin (2006) argue that qualitative data is needed for rich persona descriptions and that secondary data sources tend to be quantitative in nature. Original research that produces qualitative data might be unavoidable (ibid.).

2.5.2 Primary quantitative data

Primary quantitative data is quantitative data that is collected from the users in the context of the product the personas are designed for. Primary quantitative data

can be gathered from e.g. surveys (Mulder and Yaar, 2007), user data analytics (Cooper et al., 2014) or market segmentation analysis (Pruitt and Adlin, 2006).

Primary quantitative data is best used for gaining insight into what users are doing with the product (Mulder and Yaar, 2007; Pruitt and Adlin, 2006). What users say they are doing and what they actually do can differ significantly (Mulder and Yaar, 2007). The usage data analytics can help to point areas of the product that require further research on reasons for user behavior (Cooper et al., 2014).

According to Mulder and Yaar (2007), quantitative data reduces human bias in the personas. Data analysis methods can create categorizations of users that would not have crossed human researchers mind. They acknowledge that choice data analysis methods can still introduce human bias, but argue that the effect is much smaller than in qualitative data. (Mulder and Yaar, 2007) also find that personas are easier to justify to skeptical stakeholders if they can point to quantitative data behind the personas.

Disadvantage of primary quantitative data is that it does not give the reasons for users behavior (Cooper et al., 2014). Cooper et al. (2014) stress that quantitative data can't take the place of direct user interviews and observation, even if it's primary data. In addition, quantitative data does not produce rich enough description of users to be used in persona descriptions (Pruitt and Adlin, 2006).

Primary quantitative data is often in a supporting role. Its use is recommended to gain understanding of the domain and user behavior, which can then direct the primary qualitative research (Pruitt and Adlin, 2006, Cooper et al. (2014))

2.5.3 Secondary qualitative data

Secondary qualitative data is qualitative data that is related to the users or the product the personas are designed for. Secondary qualitative data can come from e.g. subject matter expert interviews or competitor analyses (Cooper et al., 2014) or interviews of customer service employees (Nielsen, 2013)

Benefits of secondary data are that it requires no additional research (Pruitt and Adlin, 2006) and it can inform the research process (Cooper et al., 2014). Secondary qualitative data can often be easily found in the organization (Nielsen, 2013; Pruitt and Adlin, 2006). It can be relatively rich and can provide a lot of important context to persona creation (Nielsen, 2013).

The disadvantage of secondary qualitative data is that it might not be focused in the right context. While secondary qualitative data might be in abundance, it might be difficult to find relevant secondary qualitative data (Pruitt and Adlin, 2006). The misalignment or lack of focus requires more interpretation of the collected data (Nielsen, 2013). Another disadvantage is that the secondary qualitative data is by its nature second-hand knowledge. It is already filtered and contains hidden assumptions about the users (Pruitt and Adlin, 2006). The hidden assumptions might direct the persona creation in a wrong direction (Mulder and Yaar, 2007).

While secondary qualitative data has some major disadvantages, sometimes the project realities (e.g. schedule or financial restraints) prevent comprehensive user research (Nielsen, 2013; Pruitt and Adlin, 2006). In those cases, secondary data be enough to make very effective personas within the project budget (Pruitt and Adlin, 2006).

2.5.4 Secondary quantitative data

Secondary quantitative data is quantitative data that is related to the users or the product the personas are designed for. Secondary quantitative data can come from e.g. census data on user population or scientific literature (Pruitt and Adlin, 2006), existing survey data from different context (Putnam et al., 2009; Nielsen, 2013).

Advantages of secondary quantitative data mostly align with the primary quantitative data. It is good for gaining understanding on what the users are doing (Mulder and Yaar, 2007; Pruitt and Adlin, 2006). As with other secondary data, the different context of the secondary data should be taken into account when conducting the analysis (Nielsen and Storgaard Hansen, 2014). Another main benefit of secondary quantitative data is that it is often available when other types of data are hard to obtain (Putnam et al., 2009). Analysis of secondary quantitative data can be used when the target users are hard to reach, for example in a distant country (ibid.).

Secondary quantitative shares the disadvantages of secondary qualitative data and primary quantitative data. As with secondary qualitative data, it might be hard to find relevant data (Pruitt and Adlin, 2006), misalignment or lack of focus requires careful interpretation (Nielsen, 2013), it might contain hidden assumptions about users (Pruitt and Adlin, 2006). As with primary quantitative data, it does not give reasons for user behavior (Cooper et al., 2014), and it may not provide rich enough description of users to be used in persona descriptions (Pruitt and Adlin, 2006).

Even with its major disadvantages, secondary quantitative can be effectively used to create personas (Pruitt and Adlin, 2006). Sometimes the project might constrain the user research in a way, that makes secondary quantitative data the only option (e.g., Pruitt and Adlin, 2006; Putnam, 2010). When other data is available, secondary quantitative data can be used to supplement other data (Pruitt and Adlin, 2006) and to guide other user research (Cooper et al., 2014).

2.6 Persona creation process

There are four main textbooks that instruct on how to proceed with persona creation process (Cooper et al., 2014; Nielsen and Storgaard Hansen, 2014; Pruitt and Adlin, 2006, Mulder and Yaar (2007)). While the exact steps in the process vary, the persona creation process described in the textbooks can be divided into four main steps. They are *project initiation, data collection, data*

analysis and *persona description*. General description of the different phases described in the literature can be found in Table 2.3.

Benefits of personas do not come only from the end products, personas themselves. Major benefits can be gained also from the process of persona creation (Nielsen, 2013; Pruitt and Adlin, 2006). Pruitt and Adlin (2006) go into great depth on how to communicate the personas to the entire organization. They argue that if one of the major benefits is the shared understanding of the user, it should be shared as widely as possible in the organization. Nielsen and Storgaard Hansen (2014) says that personas are a process, not a user portrait. She agrees that persona knowledge and understanding should spread through the organization, but she criticizes the use of personas as an end product of data gathering to be disseminated in the organization. For her, the most effective way of spreading deep understanding of the users is to engage people from the entire organization into the persona creation process.

2.6.1 Project initiation

In project initiation phase the project is initiated and the goals for the persona project are described (Cooper et al., 2014; Nielsen, 2013; Pruitt and Adlin, 2006). It is important to know what is the reason and need in the organization for persona development. The project initiation is a phase, where the team gets acquainted with the product and organization and how the stakeholders view the product, users and the design problem (Cooper et al., 2014).

Pruitt and Adlin (2006) emphasize the importance of building the core team. They give three reasons: personas are too much work for one person, the discussion and debate in the team is a critical activity in the persona creation process, and building a diverse core team is a good way to get organizational acceptance for the personas.

As a final step in project initiation phase, Pruitt and Adlin (2006) suggest creating an action plan to describe the *definition of scope and goals* of the project, *communication strategy* and project plan. They emphasize the need for a communication strategy to minimize the organizational resistance to using personas. Nielsen (2013) agrees that the future users of personas should be taken into account in defining persona needs.

Process phase	Pruitt and Adlin (2006)	Mulder and Yaar (2007)	Nielsen (2013)	Cooper et al. (2014)
Project initiation	Building core team Organizational introspection Creating action plan		Definition of research scope	Definition of project scope
Data collection	Collect data from varying sources: 1. Existing internal primary data sources 2. Existing external primary data sources 3. Original primary data sources 4. Assumptions and other supporting sources	1. Collect qualitative data 2. Form segmentation hypotheses 3. Collect quantitative data	No exact process defined, provides examples of possible research methods. E.g. ethnography and interviews; internal existing data, stakeholder interviews, questionnaire and focus groups; or short contextual user interviews and longer in-depth user interviews	1. Literature review 2. Competitive audits 3. Stakeholder interviews 4. Subject matter expert interviews 5. User interviews 6. User observation
Data analysis	1. Identify important categories of users 2. Process the data 3. Identify and create skeletons	Segment users based on statistical cluster analysis	1. Coding interview data 2. Categorization of codes 3. Formation of meaning – done by highlighting contrast, using affinity diagrams or using system of coordinates	1. Group interview subjects by role. 2. Identify behavioral variables. 3. Map interview subjects to behavioral variables. 4. Identify significant behavior patterns. 5. Synthesize characteristics and

Process phase	Pruitt and Adlin (2006)	Mulder and Yaar (2007)	Nielsen (2013)	Cooper et al. (2014)
				5. define goals.
				6. Check for completeness and redundancy.
				7. Designate persona types.
Persona description	1. Prioritize the skeletons 2. Create foundation document 3. Turn factoids into a story 4. Choose a photo or an illustration	Pick and describe key differentiators Choose photo Make educated guesses, be creative	1. Establish the number of personas 2. Describe the personas 3. Create rounded characters 4. Choose a photo	Expand the description of attributes and behaviors. Create persona narrative, which, by its nature, will contain some fictional situations. Choose photo for persona.
Next steps	Validate personas Communicating and educating personas to the organization Use in product development	Construct scenarios Socialize personas within the company	Construct scenarios Persona validation Introduction of personas to the organization	Construct scenarios Create design framework

Table 2.3 – Persona creation processes

2.6.2 Data collection

A critical phase in persona creation is the data collection. Different data types and sources were described in chapter 2.4. The emphasis on different data types varies in literature.

Primary data is recommended uniformly (Cooper et al., 2014; Mulder and Yaar, 2007; Nielsen, 2013; Pruitt and Adlin, 2006). Pruitt and Adlin (2006) and Nielsen (2013) recognize that sometimes use of primary data is not possible.

When it comes to qualitative or quantitative data, the literature is more divided. Qualitative data is often seen as more valuable for persona creation (Cooper et al., 2014; Nielsen, 2013; Pruitt and Adlin, 2006). In contrast, Mulder and Yaar (2007) argue that qualitative data is more objective and helps avoid designer bias in persona creation and place a higher value on qualitative data.

Pruitt and Adlin (2006) and Cooper et al. (2014) recommend first collecting secondary data to inform primary qualitative research. Cooper et al. (2014) describe a data collection process with increasing specificity of data, starting from a literature review and competitive audits, moving through stakeholder interviews and subject matter expert interviews to finally user interviews and user observations. He recognizes that the process requires a lot of resources, but recommends adhering to it as much as possible.

Pruitt and Adlin (2006) describes multiple different data sources but implies that often most organizations should only choose a few of them, that are suited to their needs. The first recommend going through internal and existing data sources, which could already provide enough data for persona creation. They then recommend conducting research to create primary qualitative data. As a backup in the case of lack of data, they recommend using secondary data from customer service interviews or even design team assumptions.

Nielsen (2013) takes a more pragmatic stance of making do with any data available. She recommends striving to do primary qualitative research but provides no exact method for data collection.

While Pruitt and Adlin (2006), Nielsen (2013) and Cooper et al. (2014) recommend doing quantitative research to inform qualitative research, Mulder and Yaar (2007) take the opposite approach.

Mulder and Yaar (2007) describe three different processes with varying data sources. Their most recommended process starts with conducting qualitative research and based on the findings, constructing hypotheses for user segmentation. Based on these hypotheses, they recommend creating a survey that measures different variables that can validate the hypotheses. The qualitative is used only to form hypotheses for quantitative research and to later help to describe the personas in detail.

2.6.3 Data analysis

The method for analysis depends on the data that was collected. Qualitative and quantitative data have different analysis methods. Regardless of methods, the aim of data analysis phase is to find groups of users that can be used as a basis for personas.

In the data gathering phase, Mulder and Yaar (2007) focused on quantitative data. They recommend using statistical cluster analysis to finding the user groups. They argue that it provides user groups that human wouldn't necessarily intuitively find and argues that this approach is more data based and more grounded in reality. This approach was implemented for example by Putnam et al. (2009). They found that it suited especially well for secondary questionnaire data and it provided clear and distinct user groups.

The approach to qualitative data is different in all of the main textbooks. Pruitt and Adlin (2006) suggest starting with important categories of users the organization already knows of. The data to be analyzed might seem overwhelmingly large and they argue that having at least some ideas of user groups helps the analyzing process.

Pruitt and Adlin (2006) recommend using a workshop utilizing iterative affinity mapping to find clusters in the data that explain the user behavior. They suggest that using a workshop with members from all aspects of the organization helps bring the tacit knowledge of the users into the analysis process.

The initial data analysis process presented in Nielsen (2013) is relatively close to the grounded theory approach by Strauss and Corbin (1990). Nielsen (2013) suggests bottom up approach of coding the interview and research data, categorizing the codes and then finding the high-level meaning of the code categories.

For finding the high-level meaning in the data Nielsen (2013) proposes the following process. First, Nielsen (2013) suggests finding contrasting pairs (e.g. price oriented vs. quality oriented customers) that allow placing the data in a continuum on different axes. After finding the contrasting pairs and placing the interview subjects on them, she recommends using affinity diagramming to find the most relevant axes. Finally, when the most significant axes are found, she recommends creating a system of coordinates where the data about the users can be placed. The process of finding the most significant axes and user groups is iterative. Finally, all of the interviewees and the data is placed in the system of coordinates and user groups are identified from clusters in the system of coordinates. These user groups are used for creating the personas.

Cooper et al. (2014) suggest a similar process as Nielsen (2013) with some streamlining. They suggest grouping data by roles and starting identifying behavioral variables, which are roughly equivalent to contrasting pairs of (Nielsen, 2013). After the initial steps, the suggested process follows almost an identical process as Nielsen (2013).

2.6.4 Persona description

Main phases of persona description are prioritizing personas, creating persona narrative and selecting a photo or illustration for the personas.

The number of final personas should be in the range from three to five, depending on the size of the project (Pruitt and Adlin, 2006). Additionally, a number of supplementary personas can be developed, but the focus should be on a few main personas (Cooper et al., 2014). After previous phases, there might be many recognized user groups. The user groups must be prioritized to pick the most important groups for further development. Prioritizing should be based on business goals (Pruitt and Adlin, 2006) and the needs of the design team (Cooper et al., 2014).

The four main textbooks suggest fairly similar contents for the persona descriptions. The suggestions are summarized in Table 2.3. All of the textbooks agree that the persona should contain basic identifying information, photo or illustration of the persona, description of a daily life in a narrative form, context related goals and motivations, context related skills and knowledge and pain points or frustrations related to the context. All but Mulder and Yaar (2007) recommend describing the family status. Other recommended pieces of information are defining quote and tagline, context related relationships and business information of interest to the project.

	Pruitt and Adlin (2006)	Mulder and Yaar (2007)	Nielsen (2013)	Cooper et al. (2014)
Identifying information (First name, age, gender)	Yes	Yes	Yes	Yes
Marital status and family	Yes	Yes	Yes	
Photo or illustration	Yes	Yes	Yes	Yes
Description of work or daily life	Yes	Yes	Yes	Yes
Context related goals and motivations	Yes	Yes	Yes	Yes
General life goals and attitudes	Yes			
Context related skills and knowledge	Yes	Yes	Yes	Yes
Tagline	Yes	Yes		
Defining quote	Yes	Yes		
Pain points	Yes	Yes	Yes	Yes

Context related relationships to other people	Yes	Yes
Business information (market segment size, goals for business etc.)	Yes	Yes

Table 2.3 – Recommended persona description contents

Building the persona narrative is a creative process and the narrative will, by its nature, contain fictional elements (Cooper et al., 2014). The personas should be specific rather than accurate as it makes the person concrete for designer and easier to empathize with (Cooper, 1999; Nielsen, 2013; Pruitt and Adlin, 2006). While the personas should aim for precision, the personas should still be representable of the entire user group (Pruitt and Adlin, 2006).

The amount of creative freedom permitted for creating the narrative varies in the literature. Pruitt and Adlin (2006) and Cooper et al. (2014)] are the strictest. In the opinion of Pruitt and Adlin (2006), in an optimal situation every statement in the persona should have a point of data to support it. They admit that it's rarely possible to achieve that, but that it should be striven for. Mulder and Yaar (2007) and Nielsen (2013) permit the most freedom for the narrative, arguing that the value created by engaging narrative is greater that high accuracy of the persona description. However, their approach differs widely. Mulder and Yaar (2007) says that when writing the persona description, it should be directed to achieve the goals of the creator. They recommend using caricatures and stereotypes to make the personas more memorable when they match the persona description. Nielsen (2013), on the other hand, recommends avoiding stereotypes and persona creator goals. She describes film-writing techniques, such as rounded characters with multifaceted personalities, to create more engaging persona descriptions. Nielsen (2013) argues that often the persona descriptions are very flat and one-sided and that decreases their effectiveness.

To document where assumptions about the personas have been made, Pruitt and Adlin (2006) advise creating *a foundation document* that documents all of the sources used for persona creation and also the assumptions made, when moving towards accuracy in the persona description. While moving towards precision is important, it is important not to make assumptions more precise than the background data warrants for (Cooper et al., 2014).

2.6.5 Next steps

After persona creation, the next steps recommended in the four main textbooks comprise of persona validation, scenario creation, educating the organization and use in design work. As a next step, all but Pruitt and Adlin (2006) recommend constructing scenarios, i.e. detailed descriptions of use cases, for the created personas. Pruitt and Adlin (2006) and Nielsen (2013) recommend validating the created personas, by using for example surveys or further interviews. All but Cooper et al. (2014) focus extensively on how to communicate the created

personas to the rest of the organization. They describe various persuasive methods for the persona introduction, e.g. life-sized persona pictures (Pruitt and Adlin, 2006), persona presentations (Mulder and Yaar, 2007) or involving the organization in persona validation (Nielsen, 2013). The end goal of persona creation is, of course, the use of personas in design work.

2.7 Evaluation of research problem in the light of the persona literature

The persona creation process requires a lot of resources (Pruitt and Adlin, 2006). The literature suggests that the most resource consuming phase of the persona creation process is the data collection. Especially the collection of primary data can be time consuming (Nielsen and Storgaard Hansen, 2014). In the review of the benefits of secondary quantitative in Subsections 2.5.3 and 2.5.4, it was found that one of the benefits of secondary data is that it might be easier to obtain than primary data. This was highlighted if the users were distant from the development team (Putnam et al., 2009). Thus, the literature indicates that the use of secondary data might lower the amount of resources required for persona creation, especially in the empirical context of this study.

One of the main reasons for failure in projects with persona approach is that the personas are not perceived as credible and they are not associated with methodological rigor and data (Pruitt and Adlin, 2006). Also, secondary data is reported as potentially potentially misleading in product development. It might be misaligned or lacking in focus (Nielsen, 2013), it might contain hidden assumptions about users (Pruitt and Adlin, 2006), it does not give reasons for user behavior (Cooper et al., 2014), and it may not provide rich enough description of users to be used in persona descriptions (Pruitt and Adlin, 2006). The disadvantages of secondary data are further elaborated in Subsections 2.5.3 and 2.5.4. From the presented disadvantages, it can be inferred that when using secondary data, the persona creation process should be especially aware of credibility and methodological rigor of the personas.

The reactions of UX designers to the use of secondary data and their perceptions of its reliability is of special interest when studying the use of secondary data to lower the amount of resources required for persona creation. If the UX designers perceive personas based on secondary data as reliable tools, it suggests one of the most prominent reasons for failure of persona projects can be avoided. The perceived reliability of personas is especially interesting, because many of the disadvantages of secondary data relate specifically to the validity of the data.

In conclusion, the literature review supports the importance and relevance of the research questions presented in Section 1.1. when studying the use of secondary data to lower the resource requirements of persona use.

3 Methods & Data

In this chapter, the methods used in this thesis are presented. First, the persona creation process is presented. Then the method for evaluation of the created personas is described.

3.1 Persona creation

The goal of this study is to find less resource and time-consuming method for creating personas. The approach used in this study was to create personas based on secondary data. The literature presented in Chapter 2 was used to develop a persona creation process that focuses on using secondary data to make the persona creation less time and resource consuming.

As a reminder, the scope of this thesis was a European Union funded Multi-Platform Application Toolkit (MPAT) project, focusing on the emerging possibilities of Hybrid TV (HbbTV) to content producers. Its aim is to provide an easy-to-use authoring tool for the creation of interactive multimedia applications. The personas were developed to understand the television consumers in the EU area.

In this section, the different phases of the adapted persona creation process are described. The different phases are project initiation (Subsection 3.1.1), persona data collection (Subsection 3.1.2), persona data analysis (Subsection 3.1.3) and persona description (Subsection 3.1.4). The scope of this thesis is limited to persona creation, so the next steps in the project are not discussed.

3.1.1 Project initiation

In the project initiation phase, the goals, team, and action plan were created for the persona project. The goal was to create personas who represent the television consumers in the European Union. The persona team consisted of the author who had support from two Senior UX Designers.

The action plan was driven by the project deadlines. The personas were developed during two months. Concurrently, another team of UX designers was developing scenarios for the MPAT tool. Typically the scenarios are developed after the persona creation (Mulder and Yaar, 2007; Nielsen, 2013; Pruitt and

Adlin, 2006). Because of time constraints, the personas and scenarios were developed concurrently. The developed personas were to be included in project report at the end of the two months and utilized in design work at a later date.

3.1.2 Persona data collection

The persona data collection focused solely on secondary data, as defined in Subsection 2.4.3. Furthermore, to make the expansive data on TV consuming more manageable and easier to analyze, the data collection was focused on television consumer and user segmentations (e.g. previous persona efforts or consumer segments developed for marketing).

User demographics and data were gathered from public research and public data source and recommendations from the project team. Possible data sources included HbbTV research, TV usage statistics, hybrid television usage research, open data libraries from public entities in Finland and abroad and television marketing research.

The data collection was performed by an extensive search of 48 relevant search keyword combinations (e.g. HbbTV persona, HbbTV media usage, "interactive TV" media consumption etc.) in Google Scholar. Top 50 search results for each keyword combination were selected for further review based on search result title and abstract or short description of the content. Based on the review, the most promising resources were selected for full study. In addition, the project team was asked for recommendations for data sources.

In the end, six studies or reports with user groupings based on media use and behavior were found and in addition, numerous other resources with supporting data were found.

Study (Shorthand)	Number of groups	Description of grouping
Sanoma Media Finland marketing segments (SMF) [2]	12	Marketing segmentation used by a Finnish media company, based on Demographics, consumer behavior and media usage
Berman and Kesterson-Townes (2012) (BK) [3]	4	Media trend analysis based on survey results of 3800 consumers globally

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[2] http://media.sanoma.fi/segmentit (accessed 7 February 2016)

[3] Berman SJ and Kesterson-Townes L (2012) Connecting with the digital customer of the future. *Strategy & Leadership* 40(6): 29–35.

Study (Shorthand)	Number of groups	Description of grouping
Courtois and D'heer (2012) (CD)[4]	3	Latent class analysis based on statistics of concurrent use of TV, tablet, screen media and print media
De Moor et al. (2014) (DM)[5]	6	Personas created based on TV technology adoption and attitudes towards technology
Maksumic (2015) (M)[6]	3	Personas created based on attitudes toward VOD online support and technological problems
Sánchez-Martínez and Ibar (2015) (SI)[7]	6	Cluster analysis based on TV prosumer behavior in Spanish university students

Table 3.1 – The data collected for persona creation

3.1.3 Persona data analysis

As recommended by persona creation best practices (Cooper et al., 2014; Nielsen, 2013), the analysis used affinity mapping that was based on behavior variables found in the data. It was found that the found user groups could be mapped on two axes: the intensity and amount of their media use and their skill level related to television and technology use. The different groups from the found studies were mapped on the two axes. The exact positions on the two axes

[4] Courtois C and D'heer E (2012) Second Screen Applications and Tablet Users: Constellation, Awareness, Experience, and Interest. In: *Proceedings of the 10th European Conference on Interactive Tv and Video*, EuroiTV '12, New York, NY, USA: ACM, pp. 153–156

[5] De Moor K, Saritas O, Schuurman D, et al. (2014) Towards Innovation Foresight: Two empirical case studies on future TV experiences for/by users. *Futures*, Futures-Oriented Technology Analysis: Practice in Search of Theory? 59: 39–49.

[6] Maksumic E (2015) Who are we developing for? : Identifying the users and their needs for the video streaming support service 'Streamingkollen'. M.Sc. Thesis, Stockholm, Sweden: KTH Royal Institute of Technology. Available from: http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A846664&dswid=8583 (accessed 9 February 2016).

[7] Sánchez-Martínez M and Ibar R (2015) Convergence and interaction in the new media: Typologies of prosumers among university students. *Communication & Society* 28: 87–99.

were approximated based on the descriptions and data available from the studies. The affinity mapping utilizing the axes produced seven different clusters of user groups. The clusters and the affinity map can be seen from Figure 3.1.

Figure 3.1 – The clusters found by affinity mapping

The clusters were prioritized based on the project needs and five of them were selected for persona creation. The first discarded cluster (seen in Figure 3.1 in the lower left, not circled) did not use television media at all and thus wasn't in the focus of the project. The second discarded cluster (seen in Figure 3.1 in the upper left, not circled) was discarded on the basis of it being a small user group with little use of traditional media. The five remaining clusters were developed further in the following phases.

In Figure 3.1 names of personas can be seen written next to clusters. The names were added later, when persona descriptions were completed. However, as the names are a convenient way to indicate different clusters, they are used here when describing the background data for each cluster. The number of different user groups from different background studies in each cluster can be seen from

Table 3.2. Shorthand for different background studies can be seen from Table 3.1

User group	SMF	BL	CD	DM	M	SI	Total
Elsa	2		1	1	1		6
Mary	3	1		2			6
Susie	1	1				2	4
Danny	2		1	1	1		5
Mike	1	1		1		2	5

Table 3.2 – Number of user groups for each cluster

3.1.4 Persona description

The persona description was divided into subtopics based on the literature as presented in Subsection 2.5.4 and on the recommendations of the project team creating the scenarios. The subtopics were private information, description of work and daily life, favorite shows, media use goals, pain points, second screen use, the social context of TV media use, devices used to watch TV content and skills and knowledge.

The subtopics, or sections, were described based on the data found and analyzed in Subsection 3.1.3. All of the data points and quotations from the background studies were inserted in the related section. If the data point or the quotation was related to multiple subtopics, it was inserted into each relevant section. The different data points and quotations were then arranged to form as cohesive narrative as possible and then they were expanded into full sentences and full narrative, where applicable. Some of the subtopics were described with bullet lists to make the description easy to read.

As recommended by the literature (Cooper et al., 2014; Pruitt and Adlin, 2006) different ranges or general descriptions (e.g. age 35-45 years or lives in urban area) were replaced by representative, but specific descriptions (e.g. 44 years old and lives near the center of Turku, respectively). This required some assumptions, but the assumptions were made to support the narrative of the personas, as recommended by Nielsen (2013).

3.2 Evaluation of personas

The personas were evaluated using semi-structured interviews with a design task. The interviews are described in Subsection 3.3.1 and the analysis of the interviews is described in the Subsection 3.3.2

3.2.1 Evaluation interviews

The created personas were evaluated in semi-structured interviews with UX designers. The interviews had six participants and each participant was interviewed individually. The goal of this study was to evaluate the created personas based on secondary data. Semi-structured interviews are well suited for formative evaluation research (Lazar et al., 2010).

The interview structure can be seen in Appendix I. To set the context for the interviews, a probe was used (Appendix II). The interviewees were asked to do a simple design exercise with the created personas. The use of the probe required that the interviewees used one persona in an actual design task. In addition, the interviewees read and evaluated two additional personas. In total each interviewee read and evaluated three personas.

As all of the interviewees were native Finnish speakers, the interviews were conducted in Finnish. One researcher attended each session. The interviews were audio recorded and transcribed. The interview lasted from 54 minutes to 72 minutes. The total length of all transcribed interviews was 80 pages.

All of the interviewees were UX practitioners in a medium sized IT consultancy company. All of the designers were familiar with the persona as a design tool and had used them as a part of their work before. Three of the interviewees were involved in the project the personas were developed for. Three of the interviewees had no prior knowledge of the persona context.

The selected sample for interviews was fairly small and all of the interviewees were from the same company. All of the interviewees were colleagues of the author and knew that the author had created the personas being evaluated. To make the sample representative of the UX designers in a wider context, a number of steps were taken when selecting the sample:

1. The interviewees were selected to have varying amount of work experience (2 to 10 years) in the UX field and in the company (4 weeks to 5 years)

2. All of the interviewees had previous experience of using personas in their work

3. The sample was selected to represent different angles of UX design: some of the designers had UX researcher background, others had background in graphical and industrial design and others in engineering

3.2.2 Method for analyzing interviews

The interview analysis method was based on grounded theory approach and adapted from Strauss and Corbin (1990). The interviews were transcribed fully. The total length of all transcribed interviews was 80 pages. Based on interview notes and literature review, preliminary coding was developed and the interviews were coded using Atlas.TI. As recommended by Strauss and Corbin (1990), the codes were iterated during the analysis. After the interviews were fully coded, the codes were categorized and unified. After the codes were categorized and

unified, the transcripts were analyzed again to verify the validity of the unified codes and to spot mistakes. Finally, the categories of codes were analyzed to find higher level concepts from the interview data.

The analysis resulted in 403 quotations with 140 codes, grouped into 31 code groups. The quotations could be included in multiple code groups. The largest and most relevant code groups can be seen in Table 3.3, with the number of quotations in each group.

Code group	Number of quotations
Amount of detail in persona description	46
Amount of focus in persona description	41
Background data	37
Comparison to prior knowledge about users	55
Critique for researched personas	39
Difference to earlier personas	12
Methods for persona use	45
Reliability decreasing factors	74
Reliability increasing factors	47
Requirements for personas	47
Secondary data	16
Social identifiability	72
Work and persona use experience	91

Table 3.3 – Analyzed code groups with number of quotations

4 Results & Analysis

The thesis set to answer following research questions:

1. How does the use of secondary data affect the creation of personas?
2. How do UX designers evaluate the reliability of a persona?
3. How do UX designers perceive reliability of personas based on secondary data?

In this chapter, the findings from persona creation and interview study are reported and analyzed. First, the created personas are presented in Section 4.1. Second, the interviews are described in section 4.2. Then findings related to the research questions are described in subsequent sections 4.3 through 4.5.

Quotes from the interviews are used to demonstrate the findings. All of the interviews were conducted in Finnish and the quotes are translated into English by the author. The original quotes can be found in footnotes.

4.1 Created personas

The Table 4.1 presents short descriptions developed for each cluster found in the data analysis phase, as described in Subsection 3.1.3.

Name	Tagline	Short description
Elsa	Pensioner with stable habits	Media use is part of Elsa's daily routine. She starts and finishes her days with the news. She isn't interested in new technology but relies on the traditional broadcast TV, watched live, and the newspapers. She is interested in trustworthy media content and relies on it to get her information on the world. Elsa does not interact with media, but is a consumer in the strictest meaning of the word.

Name	Tagline	Short description
Mary	Content comfort seeker	Mary uses media for comfort and escapism. She uses media to relax after a busy day either at work or with family. She knows about the newer technology and is slowly adopting it as it becomes easier to use. However, she prefers her set and comfortable ways of using the media. Mary is quite content at how her life is, but sometimes wishes for a bit more of excitement.
Susie	Teenage social butterfly	Susie is a teenager who uses media constantly and without stop. Interacting through media is a normal part of her life and she spends her days in full interaction with her friends. She consumes moderate amount of traditional media, but a lot of social media. Susie understands how media works on an instinctual level, without technical knowledge of how it actually works.
Danny	Career oriented family man	Danny adopted internet at a later age, but has adopted it fully. His history of traditional media usage is clearly seen. He watches content through television, but uses digital television recordings and VOD services to set the times he watches the content. Danny's life is very busy because of his family and career. He likes to use media for learning or other useful purposes.
Mike	True digital native	Mike was born digital and it shows in his media use. He is a mature media user in his 30s and uses media to interact with his friends, media and the world. He shares content online continuously and participates in discussions online. He's willing and able to pay for content and mostly consumes content online. Mike watches TV media when it suits him through VOD services.

Table 4.1 – The user groups found in data

One of the clusters, Mike the True digital native, was identified in the data, but the author didn't feel confident enough in the data to expand it into full persona description. This was surprising considering that another cluster, Susie the Teenage social butterfly, had less data available than Mike, as seen from Table 3.2. The four other user groups were further developed into full persona descriptions. An example of one of the full persona descriptions can be seen in Figure 4.1.

Danny, the Career Driven Family Man
Name: Danny Age: 44 Gender: Male Marital status: Married Number of children: 2, aged 8 & 11 Lives in an owned apartment near the center of Turku. Job title: Project manager at a mid-size IT company Household disposable income (after taxes): 3800€ / month

Description of work and daily life

Danny is kept busy by his family and work. He is married to Nicole and they have two daughters. Danny's time is mainly spent working and with his daughters' hobbies. The occasional overtime he has to do doesn't bother him too much, because his work challenges him and it feels impactful.

Even though Danny enjoys his busy life, he often feels like he doesn't have enough free time. He would like to dedicate more time to learning and watching documentaries and current issue shows on television.

Danny would like to stay current with world events, but he doesn't have the time to delve deeply into news and background stories. Whenever he has a spare minute or two, he's on his smartphone reading the news. He's gotten used to reading only a small part of an article at a time and returning to it later to finish it. His TV viewing is also often interrupted by his daughters and their needs.

In the evening Danny watches quality shows with Nicole. Depending on where the shows are available, they have either recorded the show on their digital recorder or they watch it from paid VOD services. Sometimes on weekends he gets to watch a football match with his friends.

Favourite shows	**Media use goals**	**Pain points**
• News • Documentaries • Current issues • Foreign drama series • Domestic movies with his children • Football	• Relaxation • Family time • Staying current with world news • Learning	• Records and finds more content than he has time to watch • His watching is often interrupted

Skills and knowledge

- Early adopter of new gadgets, enjoys trying new devices
- Is responsible for installing and maintaining the household IT and devices
- Power user of digital TV, EPG and recorder, uses multiple VOD services such as Netflix and HBO

Figure 4.1 – An example of a full persona description

4.2 Effects of secondary data on persona creation

The background data had an effect on the created personas. Secondary data can produce personas that are rich in description (e.g., Pruitt and Adlin, 2006). However, some studies suggest that using only secondary data might not be sufficient for deep user understanding (Cooper et al., 2014). In this study, secondary data provided enough information to create rich personas. All of the interviewees commented that the created personas would provide a good starting point for design work. However, the study also revealed that there are some drawbacks to using secondary data.

The main challenges in this study were that it was challenging to find good quality data for persona creation and that even with good quality data, varying levels of detail in the data produced persona descriptions that were perceived as uneven.

4.2.1 Finding good quality secondary data can be challenging

The challenge of finding good quality data has to be taken into account when planning on using secondary data for persona creation. Pruitt and Adlin (2006), Mulder and Yaar (2007) and Nielsen and Storgaard Hansen (2014) comment that secondary data might be cheaper and less consuming than collecting primary data. The findings of this study suggest that the advantage might not be as clear as they imply, especially in a context that has little public research available.

After the initial data analysis and affinity mapping, presented in Section 3.1.3, there were more identified clusters than there were final personas. Two user groups were ruled out because they weren't relevant to the developed product. One group was a nonuser and one was a small minority, that wasn't in the project focus. This kind of ruling out of user groups is normal in this phase (Cooper et al., 2014; e.g., Pruitt and Adlin, 2006). However, in the case one of the found clusters, the author did not feel that he had rich enough data to create a full persona description.

To create a data based persona, the data has to be rich enough to make assertions about the persona. As Cooper et al. (2014) argued, the detail in persona shouldn't be more precise than the data warrants for. For of cluster that wasn't developed into a full persona description because of lacking data, the data enabled identifying the user group. To create the persona, the author felt that more data collection would have been needed, either by finding more secondary sources or by conducting primary user research. This was not possible in the scope of the project.

When aiming to produce personas based on secondary data, the availability of data has to be considered. Sometimes the secondary data might not be enough and more research is needed. In this study, the lack of data resulted in one relevant persona missing from the persona collection.

4.2.2 Secondary data might lead to uneven persona descriptions

The clusters found in data analysis had varying levels of background data, as can be seen from Table 3.2. This lead to the persona descriptions having varying levels of detail in different parts. Three of the interviewed designers spotted this without prompting. Especially one designer commented that the varying level of detail had a jarring effect when reading the persona description.

> "I'd like to keep the persona on a more general level, so that it would describe in more detail how his life goes, without speaking of whether he sends the WhatsApp message while watching television. The level of detail... It jumps a little. It's difficult... It distracts from the personas... You get the image of the guy in your head. It distracts from it."[8]
>
> *– Interviewee 2*

One interviewee commented that the personas seemed like they were created by different people. This might have been caused by different studies used in different personas as not every study was applicable to all of the personas. Different studies highlighted different details and behaviors of users.

> "If I had to suddenly figure out who's written these and you tell me that I.. I'd figure it out, that these are secondary... Based on data. I'd know it because these aren't very coherent, these stories for example. It's short snippets and then to the next thing. ... It can be seen from some parts that there are contradictions in some things."[9]
>
> *– Interviewee 1*

Some of the studies used for persona creation had more extensive descriptions than others. This might have led to their over-representation in the created personas. Especially one study, SMF, described in Table 3.1, was very narrative-focused and provided a lot of details. Other studies often supported its findings, but it might have been overrepresented in the personas.

---

[8] *"Haluis sen jotenkin pitää sen geneerisemmän tasolla sen itse persoonana, että kuvais sitä tarkemmin, että mitä se niinku miten sen päivä menee ilman et puhutaan, et lähettääks se sen WhatsApp viestin, ku se kattoo jotain telkkaria. Se detaljin taso on vähän.. Se pomppii. Sit on vaikee... Se häiritsee niinkun persoonan.. Sä saat sen tyypin päähäs. Se häiritsee vähän sitä."*

[9] *"Jos, jos mun pitäs niikun yhtäkkiä päätellä et kenen kirjottamia nää on ja sit et sä kerrot että mä.. Päättelisin kyllä, että tää on sekundaari.. Tällai datasta suunniteltu. Osaisin päätellä sen sen takia, että nää ei oo hirveen johdonmukaisia nää kertomukset esimerkiksi. Et se on niikun lyhyitä pätkiä ja sit seuraavaan asiaan. ... Et jostakin välistä sen niikun näkee, et siinä on vähän niikun ristiriitaisuutta joissakin asioissa."*

The varying amount of description in the studies and the fact that different personas had different studies as background data might have led to varying focus and level of details in different personas. This was perceived by the designers as unevenness in persona descriptions.

4.3 The designer's process of evaluating the reliability of a persona

Based on the analysis, the designer's process of evaluating the reliability of a persona has three stages: formation of mental model of the user, evaluation of new information and final evaluation of reliability. First, they formed a mental model of the user represented by the persona. Second, they compared the persona description to their mental model of the user as they read the persona description. New information of the persona was compared to the mental model. If the new information was in line with the mental model, the mental model was strengthened. If the information was in contradiction with the mental model, the mental model was weakened. Third, if in the end the mental model was strong enough, the persona was perceived as reliable. Next, the different phases are discussed in more detail respectively.

4.3.1 Formation of mental model of users

The mental model of the user was created immediately as the designers started to read the persona. They base the mental model on their first impressions of the persona, their experiences with similar people and the stereotypes they have.

In general, the designers assumed that if they are given personas, the personas are based on good data and they are well constructed. The designers reported similar experiences when they had used personas in their previous projects in their work. They saw the personas as a good starting point for user understanding.

The created personas were created to help form first impressions. Each persona had a tagline (e.g. "Danny the Career Driven Family Man") that was meant to give a quick first impression of the personas. One of the designers commented without prompting that the tagline worked as intended by the author.

Immediately after first impressions of the persona, the designers formed a mental model of the user and complemented it with details from their previous experience or their assumptions. All of the designers used the people they knew or their own assumptions to fill in and complement the mental model in their head as they read the persona.

Three of the designers actively searched for someone they knew that resembled the persona. They said this helps them to fill in the missing details and make the persona more relatable. As a related note, two of the six designers interviewed reported that they combined characteristics of multiple people to form the

mental model they had and all of the designers reported that some of the personas resembled someone they knew.

> "Mary's probably the most credible because I can immediately put a relevant persona in its spot. She's strongly related to my mother and she's very alike her and I know that she could exist."[10]
>
> – Interviewee 1

In five cases, the designer didn't know anyone that was similar to the persona. The designers then compared the persona to preconceived ideas, or even stereotypes, that were similar to the persona. As with the designers who knew someone resembling the persona, the designers using preconceived ideas and stereotypes filled in the mental model of the persona as they read the text.

> "I didn't really relate this [Mary] to any real people as I read it. I only thought of a clichéd middle-aged mother."[11]
>
> – Interviewee 4

The mental model of the user was created in the first moments of reading the persona. The designers hadn't familiarized themselves with the persona very well before they had a strong mental model of the user. The mental model was heavily affected by their prior experiences and assumptions of the user type.

4.3.2 Evaluation of new information

When encountering new information in the personas, the designers compared the persona description to their mental model of the user. If the new information was in line with the mental model, the mental model was strengthened and the persona was perceived as more reliable. If the information was in contradiction with the mental model, the mental model was weakened and the persona was perceived as less reliable.

As the designers continued reading the persona, they evaluated new information by comparing it to their mental model of the user. When the designers read new information, they commented on how it related to their experiences of similar people or whether it matched their assumptions of the user type. Sometimes they commented that a certain detail seemed surprising, but concluded that it might be real based on the data.

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[10] *"Kyl se Mary varmaan ois niinkun uskottavin, koska mulla on niinkun heti työntää siihen joku persoona johon se liittyy. Se liitty olennaisesti niinkun mun äitiin ja se on hyvin saman tyyppinen ja tiiän et se vois olla olemassa."*

[11] *"En oikeestaan kohdistanut tätä [Marya] kehenkään oikeeseen ihmiseen siinä kun mä sitä persoonaa lueskelin. Tälläi kliseistä keski-ikäistä perheenäitiä vaan aattelin."*

In general, the data behind the persona was implicitly considered equal or lesser to designer's own experiences or assumptions. This was emphasized by the fact that the designers didn't have access to the background data. Four of the designers explicitly said that they would have wanted to confirm persona description details from the background data.

If the new information was in line with the mental model, it was used to further clarify and strengthen the mental model. However, if the new information conflicted with the mental model the designers had in their head, it created a crack in the believability of the persona. All of the designers perceived some details as suspicious or unreliable. Even if there were commonalities, the details perceived as unreliable varied from designer to designer.

> "You kind of always search for a real person from your inner circle and think it through them. ... It's pretty common [to think] that 'oh, this is like my brother' or 'oh, this is like my mother', that's the conclusion the people generally make when they read a persona. ... And then they think how he behaves in different situations. ... Here there are contradictions like 'my mother doesn't do this' that make you think."[12]
>
> – Interviewee 1

The contradictions between the persona description and the designers' mental model affected the perceived reliability of the persona negatively. Even minor contradictions could significantly lower the perceived reliability.

> "The most important thing is that if some contradictions are found, it's easy to question the entire persona description."[13]
>
> – Interviewee 3

4.3.3 Final evaluation of reliability

The personas were perceived as reliable when there were no contradictions between the designer's mental model and the persona description. If the mental model of the designer was supported by the persona, the persona was perceived as reliable.

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[12] *"Sä tavallaan aina haet niin kun omasta lähipiiristä koitat miettii semmosen oikeen tyypin ja sit miettii niinkun sen kautta. ... Se on aika yleistäkkin et 'aa tää on niinkun mun veli' tai 'aa tää on niinku mun mutsi', et semmosen johtopäätöksen varmaan ihmiset keskimäärin tekee kun ne lukee jotain persoona ... Ja sit ne miettii miten se käyttäytyy eri tilanteissa. ... Täs tulee sellasii ristiriitasuuksia 'et eihän se mun mutsi näin tee', et tiiäksä rupee miettii näin."*

[13] *"Tärkein juttu, et jos sieltä löytyy jotain ristiriitasuuksia, mikä nousee esiin, ni sit siinä vähän helposti kyseenalaistaa koko persoonakuvauksen muutenkin."*

> While reading that or doing the task, did you evaluate the credibility
> or reliability of the persona description?
>
> "Well... No. I didn't come across anything that sounded unbelievable.
> So I didn't evaluate anything.."[14]
>
> – Interviewee 6

Only two of the designers pointed out a detail that had increased the reliability of the persona, but all of the designers pointed out details that had contradicted with their mental model and decreased the perceived reliability of the persona.

The designers seemed unaware of how details that matched their mental model strengthened it at the same time. However, the effect was apparent in comments like below, where the designer had been building a certain mental model and suddenly the persona description presented something that did not agree with that interpretation of the persona.

> "This began to form a character in the sense of that you can think of
> Mary in reality. And because of that, I began to question [these
> details]."[15]
>
> – Interviewee 1

4.4 The elements affecting perceived reliability of personas

Section 4.3 described the designers' process of evaluating the perceived reliability of the personas. This section provides more detail on the specific elements that affected the perceived reliability of the personas.

The main elements that affect the perceived reliability of personas created based on secondary are:

– Level of detail in personas
– Compatibility with mental model of the designer
– Transparency of research method and data analysis
– Perceptions of secondary data

The different elements will be presented next. The Subsection 4.4.1 discusses the level of detail in personas and its effects on perceived reliability. The

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[14] *Entä arvioks sä tossa tehtävää tehdessä tai tota lukiessa sen uskottavuutta tai luotettavuutta, ton persoonakuvauksen? "No tota.. Ei.. Siinä ei tullu vastaan mikään mikä kuulostas epäuskottavalta. Niin ei sitten tullu arvioitua mitään.."*

[15] *"Kyl täst alko muodostuu hahmo, siinä mielessä, et voi sit kelaa sita Marya oikeesti. Ja sen takia alko kysenalaitaaki [näitä yksityiskohtia]"*

Subsection 4.4.2 describes the effects of persona's compatibility with designers mental model of the user. The Subsection 4.4.3 discusses the importance of transparency of research method and data analysis. Finally, the Subsection 4.4.4 details the effects of designer's perceptions of secondary data.

4.4.1 Level of detail in personas

The amount of detail affected the designers' evaluation of personas in two ways: enough details were needed to make the personas believable, and a small perceived contradiction in details could significantly reduce the reliability of the entire persona. Thus, the level of detail is both a strength and a liability. Too little detail means the personas won't be relatable or feel like real people. Too much detail makes the persona too specific and it won't be perceived as a reliable tool.

Four designers commented that details brought or more details would have brought the personas to life. When a detail was believable to the designer, it could increase the believability of a persona. The effect was especially clear when the designer felt that the detail was spot on accurate.

> "There were also parts that were... So true. There was.. What was it... Somewhere there was that the television is always on. ... Lets just say that it holds pretty well true when meeting people from comparable demographics within a short amount of time."[16]

> – *Interviewee 4*

Similarly, one of the created personas was criticized by three designers for lacking in detail. They said it was hard to get a handle on and to understand the motivations of the persona. On the other hand, one of the designers strongly identified with the same persona, based on few but accurate details.

However, depending on the designer's personal experience and expectations, the reactions to different details varied and sometimes were on the opposite ends of the spectrum. The same details could increase and decrease the believability of a persona as can be seen from the following quotes.

> "I immediately saw also myself in this. That I'd like to watch documentaries, as I like documentaries probably the most, but I never have time because someone comes and interrupts me all the time... To some this could pass as a small detail that doesn't really

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[16] *"Täällä oli myös semmosia kohtia, että.. So true. Täällä oli.. Mikähän se oli.. Jossain tossa oli, että telkkari on aina päällä. ... Sanotaan, että vastaavan demografian liittyviä henkilöitä kun tapaa niikun useampia lyhyen ajan sisällä, ni noi piti aika paljon paikkansa"*

matter that much, but it matters so much when you know what it is like."[17]

    – Interviewee 5

"And then he feels like that he doesn't have enough free time and he has a family, pretty young children. And then the thing he wants to spend time on, is to watch documentaries from television. It makes me feel like that here's again the television that's forced into his life. It doesn't immediately... It doesn't sit well."[18]

    – Interviewee 1

A persona's perceived reliability and thus usability as a design tool can be affected by internal expectations of designers and the effects of details can be hard to predict.

The fact that the details can be dangerous to the believability was noted by two of the interviewees. They commented that describing the persona in too much detail could be dangerous as it gives points of failure for the believability.

"It's also safer to make broader assumptions than to think on very detailed level. ... There's the danger that there's too much guessing, which isn't based on research. That's why I don't go very deep in those [persona descriptions]."[19]

    – Interviewee 3

4.4.2 Compatibility with mental model of the designer

As detailed in Section 4.3, the designers started forming a mental model of the persona type as they read the persona description. The mental model was based part in the persona, part in their prior knowledge. When they did not have specific knowledge of the persona type, the mental model was influenced by their assumptions and even stereotypes.

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[17] *"Niinkun näin myös itseni heti tässä. Että haluais kattoo jotain dokumentteja, niinkun mä tykkään varmaan eniten dokumenteistä, mutta kun ei vitsi oo ikinä aikaa ku joku tulee keskeyttää koko ajan vaikka niikun.. Se ehkä jollekin tämmönen voi mennä ihan vaan ohi, että se on vaan yks sivulause eikä sillä oo tavallaan niin väliä, mutta se on tavallaan niin väliä, kun tietää mitä se on."*

[18] *"Ja se kokee, et sil ei oo riittävästi vapaa-aikaa ja sillä on perhe, suht pienii lapsia. Ja sit se mihin se haluu sitä aikaansa käyttää on kattoa telkkarista dokumenttejä. Ni tulee semmonen, et no niin et taas tänne on tungettu se TV sen elämään. Ni välttämättä niinku heti.. Niinkun heti istu."*

[19] *"Et se on sellai niikun turvallisempaakin tehdä semmosia laajempiakin olettamuksia kuin, että miettii kauheen tarkkaan. ... Siinä on se vaara tosiaan, et siinä arvaa vähän liikaa, mikä ei tavallaan perustu tutkimustietoon. Et sen takia ehkä mä en mee kauheen syvälle noissa [persoonakuvauksissa]."*

One of the main benefits of the personas is that they should help the designers avoid stereotypes when designing. This argument has also been criticized by some (e.g., Putnam, 2010; Turner and Turner, 2011). The findings of this study support the critique.

Even if the designer knows that the persona is based data, they might hold on to their own assumptions of the persona type. When the designers encountered a detail that challenged their own assumptions, they did not discredit the personas validity entirely. However, they did want to check whether the background data could support the challenging detail. When the background data wasn't available, they remained skeptical of the challenging detail and tended to hold on to their assumptions. Furthermore, one of the designers said that even validation by background might not be able to entirely negate the negative effect on perceived reliability.

> Do you think that it would help that it could be seen, where each part has originated from?

> "It could, in some way, help. But in a way, if the story breaks, then it's broken. I don't know, regardless of how much you try to explain it away, does it help."[20]

> – Interviewee 1

In the interviews, two of the designers commented that one of the personas held different values than the designers did. Especially for one of them, this lowered the perceived reliability of the persona. The persona was described as a career-driven family man with children. One of his pain points was a lack of time for himself and his television viewing was often disrupted by his children. The two designers commented that the persona had questionable life priorities. The behavior went against their mental model of the persona as a family man. This decreased the perceived reliability of the persona for those designers.

4.4.3 Transparency of research method and data analysis

The data and research used in personas need to be transparent (Pruit and Adlin, 2006; Pruitt and Grudin, 2003). The use of secondary data in personas highlights this issue. The interviewed designers felt that they need to be able to verify the details in persona if needed.

All of the interviewed designers commented on the need to have access to the background data. Five of the designers commented that the personas should always be data based.

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[20] *Luuleks sä, et siin auttas, että siin näkis että mistä noi on tullut noi mikäkin kohta? "Voi olla, et jollain tapaa, auttas, mut tavallaan, jos se tarina menee rikki ni sit se on rikki. Et en mä tiiä, et vaikka kuinka selittelee niin tota auttaaks se."*

Two of the designers commented that if the persona contains assumptions, it can be useful but it wouldn't be a proper persona. The assumptions should be made explicit and clear to the reader of the persona.

> "There should be large enough amount of data, so that they can be created. Just half making them up, kind of taking data from somewhere and then using imagination to fill in a half of it, I'm very critical of that. Of just making them yourself, making things up. Or you can make them up, but then it's not the same thing."[21]
>
> – Interviewee 5

The need to access background data was strongly related to encountering a detail that contradicted with their mental portrayal of the persona. Four of the designers were especially interested in the background data. They had encountered a detail they wanted to check from the background data. Also in the other interviews, the need to access background data was most often raised when discussing some surprising detail in the persona. If they found something unexpected in the persona description, they were suspicious of the detail unless they could confirm it from the background data.

> "Let me put it this way. If I used personas in design work... I could want to know, what the claims are based on. Especially if there's something that raises eyebrows. Exactly like that they only use WhatApp. I'd ask where this comes from. Is this a reliable claim."[22]
>
> – Interviewee 4

As the background data wasn't available, the designers remained suspicious of the surprising details and tended to side with their own experience, instead of accepting the persona's description.

One of the designers even commented that accessing the raw background data is the main function of personas. The designer said that the personas are often so interpreted that to find the voice of the real users, it is useful to dig into the background data.

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[21] *"Pitäis olla tarpeeks iso määrä sitä tutkimusdataa, että niitä voidaan luoda, että niidä voidaan luoda. Että semmonen, että niitä vaan keksitään vähän puoliks, et vähän tavallaan tulee dataa jostain ja sit vähän keksitään mielikuvituksella puolet, ni mä suhtaudun vähän kriittisesti tälläiseen, että niitä vaan ite, ite keksitään. Tai semmosia voi keksiä, mut sillon se ei oo ihan sama asia."*

[22] *"Mä käännän sen niin päin, että jos käyttäs jossain suunnittelutyössä persoonia, niin.. Mä voisin haluta tietää, että mihin siellä liittyvät väitteet perustuu. Erityisesti, jos siel on jotain mikä nostaa kulmakarvoja. Just joku, et ne käyttää vaan WhatsAppia. Niikun kysysin, että mistä tää tulee. Onko tää niikun luotettava väite."*

"Of course, there was a lot of data available, there were authentic videos of them like... People were interviewed and you could watch the videos, but then the time you had to spend on it... It's troublesome, troublesome, troublesome."[23]

– *Interviewee 2*

Three of the designers wished to know details about the research and analysis methods behind the persona. They wanted to see if the data analysis was valid. One of the designers commented that the original data behind the personas might be interpreted and processed too heavily to be usable.

"Well, for example, it sounds contradictory to me, when it comes to Danny, that he's an early adopter of technologies. He'd probably like to say that himself... But what's the specific measurement used there. Who's really concluded that? Is it based on what they have said themselves for example in a phone interview or is this designer's own interpretation through researchers perceptions. This kind of things should come out here. Now they don't come out."[24]

– *Interviewee 3*

Based on the interviews, it can be said that the need for links between personas and the background data exists. One of the methods for this was presented by Pruitt and Adlin (2006) as a foundation document. The foundation document links all of the details in a persona to the source material. However, the foundation document doesn't account for designers' need to understand the method of research and analysis behind the persona.

"I doubt any outsider reading a persona would know how well the background research for it has been done."[25]

– *Interviewee 5*

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[23] *"Toki dataa oli käytettävissä paljon, että olihan semmosta autenttista videoita niistä ihan niinkun. Et oli ihmisiä haastateltu et pysty kattomaan niinku vaikka videoita, mutta se sitten se mikä aika oli käyttää.. Sehän on työlästä, työlästä, työlästä."*

[24] *"No esimerkiks niikun ristiriitasta mun mielestä kuulostaa, mitä niikun Dannyn kohdalla, että on early adapter of technologies, et se ehkä haluais sanoo sen itse.. Mut mikä se niikun spesifi mittari on siinä ollu. Kuka sen oikeesti on päätelly näin? Et onks tää niiku sen perusteella mitä nää on itse sanonu esimerkiks puhelinhaastattelussa vai onks tää niikun tutkijan kautta suunnittelijan niiku omia havaintoja. Et semmost mun mielestä tällä pitäs tulla ilmi. Et tässä ei nyt tuu sitä irti."*

[25] *"Eihän varmaan kukaan ulkopuolinen ku lukis persoonaa ni ei ne tietäs sitten kuinka hyvin se taustatyö siihen on tehty."*

4.4.4 Perceptions of secondary data

In general, the designers saw secondary data as a good basis for personas. Four of the designers did not differentiate the secondary data from primary data and saw that they could be equally valuable to persona creation. The rest said that with proper handling, secondary data could be useful. Only one designer stated that primary data would be highly preferable for persona creation.

> "Somehow I think that... That when you've done [these] based on those studies, which probably have been pretty comprehensive and in general, when there's so much of it, you've got five studies... Then... Thinking that if you'd interviewed ten teenagers yourself, I'd guess that pretty similar... I can't imagine that the outcomes could have somehow been totally different. But that's the thing... You've had a lot of data to... That's where the quality comes from."[26]
>
> *– Interviewee 5*

The designers did put emphasis that the quality of data, of research, and of data analysis has to be good. Four of the designers said that they would like to have the access to the background data to evaluate the validity of the personas themselves.

> What do you mean by reliable data here?
>
> "By credible. By reliable... Has the integrity of knowledge been preserved. Which makes it reliable. How it's interpreted, how it's documented. And how the documentation is interpreted. As long as there hasn't happened anything, it doesn't matter if it's primary or secondary data."[27]
>
> *– Interviewee 4*

Three of the designers raised concerns that secondary data can miss significant details. By its nature secondary data might not be in the right use context. Details like important exceptions or atypical behavior can be lost in secondary data.

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[26] *"Jotenkin jos nyt mää aattelisin, että.. Että just ku sä oot tehny [nämä] niitten tutkimuksien perusteella, jotka on varmaan aika laajoja ollut ja ylipäätän sit ku sitä on noin paljon, sul on viis tota tutkimusta ollu niin.. Sit.. Aateltuna, et jos sä oisit ite haastatellu kymmentä teiniä, ni mä veikkaan et aika saman tyyppisiä.. Ni jotenkin en osaa kuvitella, että miten tulis jotenkin ihan erilaista. Mut sehän siinä onkin, että.. Sullakin ollut siinä tavallaan tosi paljon sitä dataa mihin niin.. Siinähän se laadukkuus niin varmaan kumpuaa."*

[27] *Mitä tarkotat tässä siis luotettavalla datalla? "Siis uskottavalla. Luotettavalla, siis sillä, että.. Että siis onko tiedon integriteetti säilynyt. Niin mikä siis tekee siitä luotettavan. Et miten se on tulkittu, miten se on dokumentoitu. Ja miten se dokumentaatio on tulkittu. Niin tota.. Sikäli ku siellä ei oo tapahtunu mitään, niin eihän se vaikuta siihen, että onko se pääasiallista vai sekundääristä dataa."*

Secondary data is by its nature analyzed, processed and cleaned. It can, therefore, be too clean to give an accurate description of actual user behavior.

Two of the designers noted discontinuations or inconsistencies in the persona descriptions. They speculated that the inconsistencies might be caused by using multiple different sources of secondary data. The data sources have varying focus and a varying level of detail. When combined, the resulting descriptions reflect the variety of their sources.

> "Well, that's again one problem, that it can be too old and analyzed and cut too much, the data, that it's not in a raw enough form, that the interpretations have been pushed too far in some things. That can affect the... The correctness of these personas."[28]
>
> – Interviewee 3

This supports the finding in Section 4.2. The use of secondary data might lead to personas with varying levels of detail and that can affect the perceived reliability of the personas negatively.

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[28] *"No se on yks ongelma tosiaan, et se voi olla liian vanhaa ja siis teemotettu ja pilkottu jo liikaa se data, et se ei oo tarpeeks raa'assa muodossa, että ne johtopäätökset on tehty jo liian pitkälle jossain asiassa, ni se voi vaikuttaan näitten persoonien.. Persoonien niinkun.. Oikeenlaisuuteen."*

5 Discussion & Conclusions

This chapter are to summarizes the findings of the study and reflects the findings with the theoretical background of the study. The main findings are recounted in Section 5.1 and the findings are interpreted in the light of the literature in Section 5.2. In Section 5.3, the implications of the findings to persona practice are discussed. The chapter then discusses the validity of the study. The validity of the study is discussed in two parts in Section 5.4: the *internal validity* of the study and *external validity* of the study. Furthermore, in Section 5.5, the directions for future research are contemplated.

5.1 Main findings

The overall question set for this thesis in Chapter 1 was: can personas created from secondary data be useful design tools for UX designers. The findings from this study suggest that the answer is: according to the designers, yes. Designers see personas based on secondary data as a valuable design tool. However, there are some caveats which are presented next.

The most significant finding of this study is that when designers use secondary data personas, they evaluate the reliability of the personas by comparing the persona description to their previous experiences and their own assumptions. To maximize the perceived reliability of the personas, the background data and data analysis process should be made as transparent as possible.

It is also important to note that when creating personas based on secondary data, the amount of available good quality data and varying levels of detail in the data might affect the quality and perceived reliability of the personas.

The findings of this study suggest that using secondary data personas can be a valuable tool in a design process. When the drawbacks of secondary data are taken into account, the personas created based on secondary data can help designers in their work. While the designers interviewed for this study raised some concerns on limitations of secondary data, they saw it as a valuable and valid tool for persona creation.

There are a number of factors that affect the perceived reliability of secondary data personas. However, this study suggests that many of the factors are outside

of the persona creator's control. Much of the perceived reliability is created – or destroyed – in the designer's internal evaluation process.

5.2 Interpretation of findings

The goal of this study was to understand can personas created based on secondary data be a useful design tool for UX designers. To provide more detailed viewpoints to the research problem, the research questions were set to be:

1. How does the use of secondary data affect the creation of personas?
2. How do UX designers evaluate the reliability of a persona?
3. How do UX designers perceive reliability of personas based on secondary data?

Findings related to each research questions are interpreted in the light of the related research in the following Subsections 5.1.1 through 5.1.3.

5.2.1 How does the use of secondary data affect the creation of personas?

The main effects of secondary data were the difficulty of finding good quality secondary data and that secondary data might lead to uneven persona descriptions.

Inspired by Putnam et al. (2009), the data gathering process in this study aimed to curb some limitations of secondary data use. The process most often advocated for secondary data use (e.g., Pruitt and Adlin, 2006) results in a lot of data points, but they are only weakly related to each other. Using the approach developed in this study increased the quality of data, but created limitations for data availability.

The method used in this thesis focused on user groupings found in other studies. The context of the created personas was television and second screens. The context is well researched and data is easily available. However, even in this context, it was challenging to find relevant and usable data. Extensive keyword search presented in Subsection 3.1.2 provided only limited amount of user groupings. If the context had been more tightly focused or less researched, data might have been less easily available, presenting a challenge to persona creation. In this thesis, if only one of the background studies hadn't been found, the quality of the created personas could have been significantly lower.

In the data one cluster (named Mike) was identified that wasn't developed into full persona because the author felt that the data wasn't rich enough. This is surprising because another cluster (named Susie) had less background data available. Mike's background data suggested a true digital native that had fully adopted internet and new media usage modes. Susie was described to be a teenage social butterfly who instinctively used media, but did not understand how it functioned in reality. It is possible that Susie was more familiar to the author,

which enabled the author to make more assumptions when writing the persona description and still feel comfortable about the persona. However, it is also possible that there were different levels or types of details available within the data sources, which might have led to Mike not having rich data to back it up.

In retrospect, the approach should have accounted for the findings of Nielsen and Storgaard Hansen (2014), who found that satisfaction in personas was correlated with the amount of data used for persona creation: low amount of data correlated with low satisfaction with the persona method. In practice, a better approach would probably be somewhere in the middle of these approaches: focus on fewer good quality data sources but also collect single data points to support persona creation.

The persona descriptions were seen as uneven by the interviewed designers. Data based persona approaches (Cooper et al., 2014; e.g., Pruitt and Adlin, 2006) highlight the need for linking every part of the description to background data. This combined with varying levels of data used in this study led to uneven levels of details in personas, which the designers noticed.

In the interviews, the UX designers saw the personas as a heavily data-based tool, so taking too much liberty in the narrative could have been detrimental. Nielsen (2013) takes a more lenient approach to data, prioritizing coherent narrative over exact data references in personas. She claims that filling in missing details helped designers relate better to the personas and see them as people, not objects. It could be suggested that when writing persona descriptions, some leniency towards filling the narrative should be allowed, but it should be explicitly stated where, how and what parts of the persona description were not solely based on data.

5.2.2 How do UX designers evaluate the reliability of a persona?

The findings of this study support the criticism that personas might not help designers avoid ill-informed assumptions of the users. It also serves as a reminder for designers that when using personas, they should always be aware and critical of the possible bias and assumptions they might have on users. This is interesting because one of the important benefits of personas in literature (e.g., Cooper et al., 2014) and in the industry (Miaskiewicz and Kozar, 2011) is that personas challenge assumptions of designers.

When evaluating the reliability of a persona, UX designers very quickly formed a mental model of the persona. The model was based on first impressions of the persona and their prior experiences and expectations of people similar to the persona description. Reading the persona, they compared each bit of new information to their mental model and evaluated its reliability based on whether it matched their mental model or not. The persona was perceived as more reliable when it matched the quickly formed mental model of users, and less reliable when it contradicted the mental model.

This matches the findings of Putnam (2010). Even if the designers claimed to have no knowledge of people similar to personas, they always brought in their, sometimes ill-informed, assumptions. Rönkkö (2005) found that personas were used "to justify design rationales 'after the fact' to other project members as if they actually were based on the persona." The findings are also in line with Turner and Turner (2011) who argued that stereotypes are unavoidable when using personas.

5.2.3 How do UX designers perceive reliability of personas based on secondary data?

Four main components affecting the perceived reliability of personas were found in this study. They were:

- Level of detail in personas
- Compatibility with mental model of user
- Transparency of research method and analysis
- Perceptions of secondary data

Level of detail in personas

It is important that persona descriptions provide enough details to make the personas relatable, but not too many details to break the perceived reliability of the persona. However, the appropriate level of detail can be challenging to achieve especially as it was found that the exact same details can make or break the personas reliability, depending on the personal experiences of the designer.

In the interviews, it was found that the level of detail in persona description is a balancing act between too much detail and too little detail. While lack of detail makes the personas hard to relate to, too much detail can break the perceived reliability of a persona.

The literature reflects this dichotomy. On the other hand, many (e.g., Cooper et al., 2014; Pruitt and Adlin, 2006) advocate the use of personifying details and Nielsen (2004) takes it further, suggesting the use of film writing techniques to empathize personifying details. On the other hand it is reported that too much detail distracts (Matthews et al., 2012) or even makes the personas nonrepresentative of actual users (Chapman and Milham, 2006).

Compatibility with mental model of user

How the designer forms the mental model of the persona is largely out of control of the persona creation effort. This makes it challenging to account for. The designers using personas to support their design work should be aware of how their assumptions and mental model of the persona might affect their evaluation of the persona. Even if it might lower the perceived reliability of the persona, the mismatch between the designer's mental model and the persona description doesn't affect the validity of the persona.

As an interesting note, two of the designers disagreed with the persona's values. One aspect of the mental model is how the persona should behave and when the persona behaves differently, its perceived reliability is decreased. This is supported by Pruitt and Adlin (2006) who advise not to include details that might provoke negative feelings. Negative feelings might cause designers to judge the persona, making it harder to relate to the persona.

Transparency of research method and analysis

Based on the findings of this study and the literature review, it can be recommended that the personas should be complemented with a way of linking the background data to the persona descriptions.

The interviewed UX designers said that they wanted to have access to the background data. The need for background data and research method transparency has been noted by many (Faily and Flechais, 2011; Matthews et al., 2012; Pruitt and Grudin, 2003; Putnam, 2010). Matthews et al. (2012) found that people outside UCD teams did not need access to background data after initial proof of persona validity, but the designers needed immersion in user data in their design activities. Also, in a study by Friess (2012), it was found that "those who are involved in the creation of the persona have a better understanding of the personas and the user-at-large than those who are mere recipients of the personas."

In retrospect, the personas should have been complemented with foundation documents described by Pruitt and Adlin (2006) or similar methods of providing background data (e.g., Faily and Flechais, 2011; Matthews et al., 2012). As it is, this study supports that the designers feel like they need access to background data, but it can't be inferred if they would actually use it in the design work.

Perceptions of secondary data

The findings of this study suggest that designers don't hold secondary data as less reliable than primary data. While the use of secondary data is recommended in some instances (Mulder and Yaar, 2007; Pruitt and Adlin, 2006), the literature has not explored the designers attitude to secondary data. In this study, the designers did not differentiate between primary and secondary data. They held the opinion that if the data collection and analysis methods were sound, there is no reason that the evaluated personas would be less reliable than personas based on primary data. Where the designers had concerns about the use of secondary data, they stated that they could be eased with transparency in research and analysis methods.

5.3 Implications for using personas in practice

The findings of this study have implications for persona creators and for designers who use personas in their design work. The implications concern

mainly the persona creators but are also of interest to designers using personas. The main implications are described in Table 5.1.

For creators of secondary data personas, the main implication of the findings is that the link between personas and the background data should be made as transparent as possible. According to the findings, it can mitigate the effect of designers' varying reactions to personas.

The instructions on persona use focus on showing the link between the persona descriptions and the background data. For example, Pruitt and Adlin (2006) suggest using foundation document with all of the persons. The findings of this study suggest that the suggested measures might not be sufficient to convince designers. The designers wish not only to know what the background data was but to also know how it was analyzed.

The level of detail in persona creation is a balancing act. On one hand, too little detail makes the persona uninteresting and unhelpful. On the other hand, too many or too specific details create more chances for the details to conflict with designers' previous experience and assumptions.

For designers using the personas, the main implication of the findings is that they should be aware of their tendency to discredit data based personas when the data disagrees with their own experience and assumptions. It should be noted that the author doesn't recommend that designers should be less critical when reading and using personas. However, designers should be aware of their own biases that affect the persona evaluation.

Recommendation	Effect on perceived reliability of a persona
Focus on good quality data but use single data points to support persona creation	Good quality secondary user groupings might be challenging to find. Using single data point sources can help create more coherent and level persona descriptions.
Allow some freedom in writing persona descriptions, but indicate the divergence from data in a clear way	Persona descriptions can be enhanced by enriching the characters to make them more relatable. However, the divergence from actual data should be made clear. The designer can evaluate herself whether to take the addition into account when doing design work.
Balance the level of detail in personas	Enough details are needed to bring reliability to the personas. However, too many details can distract and break the reliability of a persona.
Make the research and analysis method transparent	Increasing transparency enables the designer to check whether a surprising piece of information is based on data. Without proof, the reliability of the entire persona suffers.
Designers should be aware of their own bias and	When considering the reliability of a persona, designer's prior experiences affect the

| assumptions when using personas | evaluation. Designers should be aware of their bias and critical of their liability to reject surprising information. |

Table 5.1 – Implications for using personas in practice

5.4 Validity

The validity of this study is examined from two perspectives, internal validity and external validity. The *internal validity* concerns the validity of the selected study methods and research used in the thesis. On the other hand, the *external validity* takes into account the applicability of the study to the wider context in the practice.

5.4.1 Internal validity

Internal validity refers to the validity of chosen study and research methods in the thesis. The internal validity is examined from three different angles: the persona creation methods, the choice of the evaluation method and the choice of sample.

The persona creation method was combined and adapted from the literature on persona creation process. The data gathering focused on finding studies and research that had categorized or grouped users in the project context. This was done to gather consistent and broad background data. However, the data selection criteria may have limited the amount of data that could be found and led to personas that were lacking in data. Data analysis revealed seven user groups, of which two were discarded for project focus reason and one did not have enough data to produce valid persona description. The produced four personas were fairly typical users. While they may present the majority of the user base, it is possible there might have been other relevant, more extreme user groups. Some of the data sources provided richer data than others, which might have led to them being overrepresented. This might have affected the persona creation.

Semi-structured interviews were chosen as a method for evaluation of the created personas. Interviews are very useful for evaluation (Lazar et al., 2010). A different approach to the study could have been an observational study with contextual inquiry. If the study had been in the actual context of designers using the personas, the understanding generated might have been deeper. However, the project scope did not allow for observational study. To compensate the lack of observational study, the interview included a probe, a short design task, to evaluate the created personas. For completing the design task, the designers were required to utilize persona to support their work. The selected sample for interviews was fairly small. The interviewees were from a small consultancy company and worked in the same design team. The focus of the study was in UX

designers perceptions on personas. To make the sample representative of the UX designers in a wider context, a number of steps were taken when selecting the sample:

1. The interviewees were selected to have varying amount of work experience (2 to 10 years) in the UX field and in the company (4 weeks to 5 years)

2. All of the interviewees had previous experience of using personas in their work

3. The sample was selected to represent different angles of UX design: some of the designers had UX researcher background, others had background in graphical and industrial design and others in engineering

All of the interviewees were colleagues of the author and knew that the author had created the personas being evaluated. This might have resulted in the interviewees being kinder to the created personas than warranted for.

5.4.2 External validity

External validity refers to the applicability of the findings outside of the study context. This study evaluated the perceived reliability of personas created based on secondary data.

As is the case of any qualitative evaluation study, the context of the study is unique. However, the findings of the study can be applicable to other contexts with certain limitations.

The findings related to the effects of secondary data on persona creation may be limited by the chosen persona creation method. The method was chosen to increase the quality of background data with the tradeoff that there might be less of the background data. The method used strict selection criteria for data sources. The effects of data availability might not be fully applicable to other secondary data creation methods.

While this study adapted a method for persona creation from the literature, the final persona descriptions were fairly standard format, as noted by the interviewed designers. Thus, the findings of this study can be applied when using secondary data to create personas. The implications for persona use in practice, as described in Section 5.3, can be of great value to practical implementations of the persona method.

When the designers were asked about their thoughts on reliability of secondary data versus primary data, most of the designers didn't see a difference in the reliability. The literature also supports the main finding. Hence, the main finding of the persona evaluation process may be applicable outside to other types of personas as well.

While the findings of this study provide new viewpoints to personas, they are in line with the previous literature. The findings contribute to the general discussion of persona use, highlighting some aspects of persona creation that need to be accounted for. For example, the transparency of research methods is

recommended by many authors (Faily and Flechais, 2011; e.g., Pruitt and Grudin, 2003). This study highlights the need to also include the methods used for analysis of the data.

Furthermore, it has been suggested that secondary data could decrease the cost of and the time needed for data collection (Cooper et al., 2014; Pruitt and Adlin, 2006). While it was not in the focus of this study, the method used in this study was fairly light-weight compared to the data collection methods described in literature. One of the main findings was that the designers perceived the created personas as valuable design tools. Thus, the findings of this study suggest that the use of secondary data could be more widely applied in persona use to decrease the costs and time needed for the persona creation.

5.5 Further research

The focus of this study was on perceived reliability of personas crated based on secondary data. The study revealed four avenues for further research: the validity of personas based on secondary data, the designers' process for evaluating personas in wider context, understanding how designers prior experience affects the need for detail in persona descriptions, and seeing whether making background data and analysis transparent would help designers challenge their assumptions.

The *validity* of personas based on secondary data remains a topic for further research. This study focused on *perceived reliability* of the personas, but due to the scope of the project, this thesis did not study how well the created personas matched the reality of the users, i.e. the *validity* of the personas. It would be important to understand how the use of secondary data in persona creation affects the *validity* of personas.

The study revealed the designers' process for evaluating of personas. The process should be studied, to see if it applies in the wider context of personas, not just personas created based on secondary data.

The persona creation literature could greatly benefit from deeper understanding of how designers' prior experience affects the perceived reliability of the personas and how to set the correct level of detail in persona descriptions. The findings of this study suggested that designers might react to same details in opposing ways: a detail might increase reliability for one designer and decrease it for the other.

One important avenue for future research is to study if the transparency of background data and analysis methods helps designers challenge their assumptions about users. The findings of this study suggest that just presenting the personas to UX designers is not enough to challenge their assumptions and prior expectations of the user. The designers in this study *said* that they would check the background data when encountering a detail that contradicted their mental model of the user, but the findings of this study don't show whether the designers would actually accept the conflicting detail if it was supported by data.

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Appendix I:
The interview structure

The interviews were conducted in Finnish. The interview structure presented here was translated by the author. The original Finnish interview structure can be found after the English version.

Interview structure in English

Introduction

- This interview is part of a thesis, which studies the creation personas when no primary user research is conducted
- In the interview, there is an design task, but the skills of the interviewee or the end result of the design task are not evaluated

Background

- What is your education?
- How long have you been working in user-centered design?
- Describe shortly your current tasks in your job

Persona experience

- Have you used persona descriptions in design work?
- What comes first to your mind when speaking of personas as a tool supporting design work?
- When did you last use personas?
- In how many projects in the last ten years have you used personas?
- Tell about the projects, where you used them

- o Describe the last project where you used personas
- o Describe the most successful project where you used personas
- o Describe the least successful project where you used personas
- What do you think of personas as a design tool?

Design task

Present the design task. There is 15 minutes to complete the task. Remind that the skills of the designer or the end result of the task are not evaluated. Hand out the design task, introduction of HbbTV and the persona Mary.

Materials:

- Pens and papers
- Design task
- HbbTV introduction
- Persona Mary

Questions on design task

- Describe the concept you created. What did you do?
- What was the process you used?
- How did you use the persona to support your design?
  - o What benefits you feel you got from the persona?
  - o Which parts of the persona description you utilized?
  - o Was the persona lacking in some way?
  - o Did the persona differ in some way from the personas you've used earlier?

Evaluation of the persona

Take the persona description from the interviewee.

- In your own words, shortly describe the persona
- What are the most prominent things you remember?
- Was there something surprising about the persona?
- Did the persona remind you of someone you know?

Evaluation of all of the personas

Ask the designer to read the other two personas in casual way. Give Susie and Danny to the interview for reading. When the interviewee has read through the persona, give also Mary to the interviewee.

- What kind of differences did you notice between the personas?
- Did something surprise you in these personas?
- How would you arrange these three personas based on credibility? Why?
- How credible did you think the persona descriptions were? Why?
- What elements affected the personas credibility?
  - Features of the persona
  - Knowledge of the persona's background
- What kind of data do you think there is behind the personas?
  - How do you feel it affected the credibility of the personas?
  - How do you think it affected the creation of personas?
  - How do you think it affected the use of personas?

Conclusion

- Do you have questions or something you would like to elaborate on, relating to the subject?

Interview structure in Finnish

Intro

- Haastattelu osa diplomityötä, jossa tutkitaan persoonia, joiden luomiseen ei ole käytetty suoraa käyttäjätutkimusta
- Haastattelun osana on myös suunnittelutehtävä, mutta haastattelussa ei arvioida suunnittelijan taitoja tai tehtävän lopputulosta

Tausta

- Mikä on koulutustaustasi?
- Kuinka kauan olet työskennellyt käyttäjälähtöisessä suunnittelutyössä?
- Kuvaile lyhyesti nykyisiä työtehtäviäsi

Kokemus persoonista

- Oletko käyttänyt suunnittelutyössä persoonakuvauksia?
- Mitä sinulle tulee ensimmäiseksi mieleen persoonakuvauksien käytöstä suunnittelutyön tukena?
- Milloin viimeksi käytit persoonakuvauksia?
- Kuinka monessa eri projektissa viimeisen 10 vuoden aikana?
- Kerro projekteista, joissa niitä käytettiin.
  - Minkälainen oli viimeisein projekti, jossa käytit persoonakuvauksia?
  - Minkälainen oli parhaiten onnistunut projekti, jossa käytit persoonakuvauksia?
  - Minkälainen oli huonoiten onnistunut projekti, jossa käytit persoonakuvauksia?
- Mitä mieltä olet persoonakuvauksista työkaluna?

Design-tehtävä

Esittele design tehtävä, aikaa 15 min. Muistuta, että ei arvioida suunnittelijan taitoja tai syntynyttä lopputulosta. Anna tehtävänanto, HbbTV intro ja Mary-persoona.

Materiaalit:

- Kyniä, papereita
- Tehtävänanto
- HbbTV intro
- Persoonakuvaus Mary

Kysymykset suunnittelutehtävästä

- Kerro konseptistasi. Mitä teit?
- Mikä oli käyttämäsi prosessi?
- Miten käytit persoonakuvausta suunnittelusi apuna?
  - Mitä hyötyä koit saavasi persoonakuvauksesta?
  - Mitä osia käytit hyödyksi?
  - Oliko persoona jollain tavalla puutteellinen?
  - Erosiko persoona jollakin tavalla aiemmista käyttämistäsi persoonista?

Persoonan arviointi

Ota persoona pois haastateltavalta.

- Kuvaile persoonaa lyhyesti omin sanoin
- Mitkä asiat jäi päällimmäisenä mieleen?
- Oliko persoonassa jotain yllättävää?
- Muistuttiko persoona jotain tuntemaasi henkilöä?

Kaikkien persoonien arviointi

Pyydä lukemaan kaksi muuta persoonaa läpi kevyesti. Anna luettavaksi Susie ja Danny. Anna myös Mary takaisin, kun persoonat on luettu.

- Mitä eroja havaitsit persoonien välillä?
- Yllättikö näissä persoonissa jokin sinut?
- Miten järjestäisit nämä kolme persoonaa uskottavuuden mukaan? Miksi?
- Kuinka uskottavana pidit persoonakuvauksia? Miksi?
- Mikä tekijät vaikuttivat persoonan uskottavuuteen?
    - Persoonan ominaisuudet
    - Tiedot persoonan taustoista
- Minkälaista dataa uskot persoonien taustalla olevan?
    - Miten koet sen vaikuttaneen persoonien uskottavuuteen?
    - Miten uskot sen vaikuttaneen persoonien luomiseen?
    - Miten uskot sen vaikuttaneen persoonien käytännön hyödyntämiseen?

Lopetus

- Onko kysymyksiä tai jotakin mitä haluaist kertoa aiheeseen liittyen?

Appendix II:
The design task and handouts

The design task was in Finnish, the introduction to HbbTV was in English. The English version of the design task was translated by the author. Also, a picture of a TV remote and the persona Mary the Content Comfort Seeker were given to the interviewees.

Design task, in English

The Finnish Broadcasting Company is producing a new domestic hospital drama series. As a part of the drama series, the aim is to utilize the possibilities for increasing the interactivity of the TV broadcast enabled by the HbbTV technology. The goal is to give the audience new ways to enjoy viewing the series. Your task is to design a concept that utilizes television as a media. One of the main audiences for the series is represented by the persona Mary the Content Comfort Seeker.

The Finnish Broadcasting Company has given you total freedom to create a concept that best suits the needs of the target audience.

You can demonstrate the concept and its use with text or drawings. The control method for the TV interface is a remote control

Design task in Finnish

Yleisradio on tuottamassa uutta kotimaista sairaaladraamasarjaa. Draamasarjan yhteydessä on tarkoitus hyödyntää HbbTV teknologian tuomia mahdollisuuksia lisätä TV-lähetykseen vuorovaikutustoiminnallisuutta. Tavoitteena on tarjota katsojille uusia tapoja nauttia sarjan katsomisesta. Tehtävänäsi on suunnitella konsepti, joka hyödyntää televisiota mediana. Yksi draamasarjan pääkohderyhmistä havainnollistaa persoona Mary the Content Comfort Seeker.

Yleisradio on antanut vapaat kädet luoda kohderyhmän tarpeisiin parhaiten sopiva konsepti.

Voit havainnoillistaa konseptia ja sen käyttötapaa teksin tai piirrosten avulla. TV-näytöllä olevan käyttöliittymän ohjauslaitteena on kaukosäädin.

HbbTV description

HbbTV – How it works

HbbTV brings a range of new possibilities to consumers. There are a number of ways that HbbTV technology can be used, but a typical use case is as follows.

When a viewer's TV supports HbbTV and the broadcaster makes available a "broadcast-related application", the viewer will see a "call-to-action" in a corner of the screen. This might, for instance, be a logo showing a red button, informing the viewer that an app is available for launch at the press of that button. When pressed, the app – that was already resident in the TV – will be displayed.

The app may provide extra information on a program (e.g., sports statistics), show a program guide with the option to switch channels, or provide a menu with access to additional video programming. Other options include real interaction, for example multi-user quizzes where the user plays against other HbbTV viewers. The user interacts with the screen using a variety of buttons on the remote – the coloured buttons, the cursor buttons, and the numbered buttons. The newer, version 2 release of the specification also supports interaction through a mobile device such as a smart phone or a tablet.

https://www.hbbtv.org/overview/

The remote control

The persona Mary the Content Comfort Seeker

Mary, the Content Comfort Seeker

Name: Mary
Age: 51
Gender: Female
Marital status: Married
Number of children: 2, aged 18 & 19
Lives in suburbs of Helsinki, in own house
Job title: Executive Secretary at a large company
Household disposable income (after taxes): 2700€ / month

Description of work and daily life

Mary likes that her life is steady and stable. She has a husband, Adam, and two children who are on the verge of moving out to study. The children are quite independent but she still cooks dinner for them almost every day.

At work Mary uses computers as a normal part of her job as a secretary. However, at home she isn't very interested in them. Her husband is more interested in technology and has bought a lot of new devices, but Mary doesn't really know how to use them. She's happy to use EPG to find TV shows and to occasionally check the teletext for

news.

Mary doesn't think it is a hobby, but she spends a lot of time knitting and making clothes. She uses her husband's iPad to surf the internet for knitting ideas and instructions. Often she watches the TV at the same time.

Mary and Adam have a couple favourite drama series they watch together every week. On the weekends she has a habit of watching TV while chatting with her friends on the phone.

Favourite shows
- Domestic drama series
- Soap operas
- Domestic comedy shows
- Travel shows

Media use goals
- Relaxation & comfort
- Escapism with long time favourite shows
- Taking the thoughts away from work
- Spending time with husband

Pain points
- Lacks confidence when dealing with unfamiliar devices or services

Skills and knowledge
- Has a Netflix account that she uses to watch one show that isn't on the TV. Her children installed it for her
- Uses both teletext and her husbands iPad to check the news
- Sees the new technology as something potentially useful, as something she will get around to some day when she has the time to learn how to use it