Three Perspectives on Fertility Treatment

– a Temporally Extended and High-Risk Service and a Conversational Taboo

Doctoral Dissertation

Submitted to the
Faculty of Business and Economics
TU Dortmund University

In partial fulfillment of the requirements
for the degree of
Doctor rerum politicarum (Dr. rer. pol.)

by

Jana Grothaus, M.Sc.
Email: jana.grothaus@tu-dortmund.de

Dissertation Committee:

Prof. Dr. Hartmut H. Holzmüller
Professorship of Marketing
TU Dortmund University

Prof. Dr. Lena Steinhoff
Chair of Service Management
University of Rostock

Prof. Dr. Tessa Flatten
Professorship of Technology Management
TU Dortmund University

Research project in collaboration with

MERCK

KINDERWUNSCH
DORTMUND SIEGEN DORSTEN WUPPERTAL

Dortmund, July 2022

Preface

This dissertation was written during my three years at the Department of Marketing at TU Dortmund University as part of a research project in collaboration with Merck Serono GmbH and MVZ Kinderwunschzentrum Dortmund GmbH. I am very grateful for the support of the project partners, without whom my research would not have been possible.

Furthermore, I would like to express my deepest gratitude to my supervisor Professor Dr. Hartmut H. Holzmüller, who inspired and guided me in every stage of my dissertation. I am thankful for his trust and his support as well as for providing me the opportunity to present my research at conferences and workshops around the world.

I also thank Professor Dr. Lena Steinhoff for her meaningful feedback at several doctoral workshops and her readiness to be the second reviewer of my thesis as well as Professor Dr. Tessa Flatten who agreed to be the third member of the committee.

Finally, my thanks go to Dr. Sarah Köcher and Dr. Sören Köcher, my co-authors and colleagues. You were my most important contact persons in the past three years, encouraged me all the way and helped me to improve my work. I feel blessed to have been able to work with you and learn from your experience.

Table of Contents

C Empirical Research Paper 2: Coping with Uncertainty in High-Risk Services 33

D Empirical Research Paper 3: #infertility – Dealing with Taboo Topics on Social Media 75

List of Figures

Part A – Introduction

Part B – Empirical Research Paper 1

Part C – Empirical Research Paper 2

Part D – Empirical Research Paper 3

Part E – Conclusion

List of Tables

Part B – Empirical Research Paper 1

Part C – Empirical Research Paper 2

Part D – Empirical Research Paper 3

A Introduction

1 Motivation and Purpose

According to recent estimates, one in six couples worldwide is—at least temporarily—affected by infertility (ESHRE 2017). For those couples, fertility treatment is often the last resort. More than 116,000 artificial fertilizations were performed in 2020 in Germany alone (Barnitzky et al. 2021), a figure that does not take into account less-invasive kinds of fertility treatment. For most couples, the period of involuntary childlessness—before, but also during treatment—is a particularly stressful phase of life, comparable to a divorce or the death of a loved one (Baram et al. 1988). Fertility treatment often comprises daily hormonal injections during the first half of the cycle and surgeries with painful aftereffects in the second half. Moreover, it represents a financial burden, as costs for one treatment cycle of artificial fertilization easily exceed €4,000, while most statutory health insurance policies cover only half of the cost (ESHRE 2017). Given that patients usually need multiple treatment cycles to achieve pregnancy, the financial burden should not be underestimated, particularly for low-income patients.

As well as physical pain and financial burden, it is emotional distress that patients suffer from most. Parenthood is a life-goal for most couples, and women in particular often feel incomplete until they have carried a child (Fischer, Otnes, and Tuncay 2007). If such a substantial part of life is at threat, patients are emotionally highly involved when seeking treatment. During the patient journey (which takes about four to five weeks from the initial injection until learning the outcome and usually comprises more than one treatment cycle until pregnancy is achieved), patients go through different emotional phases of hopes and setbacks, which is why they often describe it as an "emotional rollercoaster" (Hanna and Gough 2016; Sweeny et al. 2015). The high risk of failure is why several treatment cycles are often necessary to achieve pregnancy. The success rate of one cycle of artificial fertilization is only about 32%, while one third of all patients remains childless even after multiple attempts (Barnitzky et al. 2021). A further source of emotional distress is the social stigma related to infertility, which is why many patients hesitate to talk openly about the issue and to seek support (Kaliarnta, Nihlén-Fahlquist, and Roeser 2011). One reason for this stigmatization may be the societal (mis-)perception of infertility as a social rather than a medical issue (ESHRE 2017).

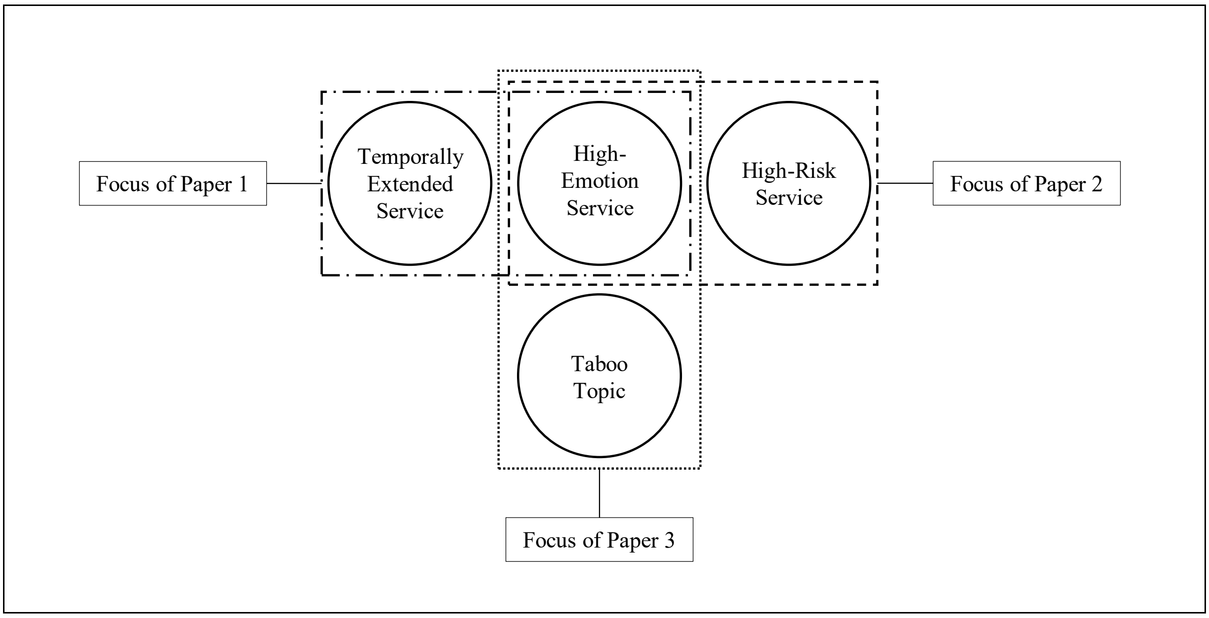
The overall aim of this dissertation is to generate a solid understanding of the situation of infertility patients and to identify ways to enhance their well-being during this stressful period of life. This aim is in accordance with the idea of transformative service research, the integration of consumer and service research, which intends to create "uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem" (Anderson, Ostrom, and Bitner 2011, p.3). Identified as one of the top priorities in service research, a special focus within transformative service research lies on vulnerable consumers (Ostrom et al. 2015). While fertility treatment is a transformative service in nature, enabling infertile couples to become pregnant, recent research has emphasized the vulnerability that patients experience due to their infertility and their lack of control while undergoing treatment (Robertson et al. 2021).

Furthermore, this research has high relevance for business practice, as it addresses the two major challenges of fertility clinics: the acquisition of new patients and the retention of existing patients until pregnancy is achieved. Fertility clinics report that a considerable number of patients spend three or more years trying to conceive before finally seeking medical assistance, which is much longer than recommended. In addition, the high emotional distress involved in fertility treatment is a frequent reason patients discontinue treatment prematurely (Brandes et al. 2009). Despite the economic motivation of fertility clinics, their goals align with those of the patients. Encouraging potential patients to seek medical help early is in their own interest, as the probability of success significantly decreases with advancing age (Barnitzky et al. 2021). Moreover, supporting and relieving patients during treatment not only enhances their well-being, but can also prevent premature termination of treatment and thereby increase the chances of conceiving. Thus, the more concrete purpose of this research is to identify ways to reduce (1) the barrier to seeking help when experiencing infertility and (2) the level of emotional distress during treatment.

From a theoretical perspective, fertility treatment has four key characteristics. First, it can be classified as a high-emotion service, which means that it triggers intense feelings during but also before service consumption (Berry et al. 2022; Berry, Davis, and Wilmet 2015). Second, it is an example of a temporally extended service (rather than a brief transaction), assigning importance to the dynamics of the relationship between consumer and service provider (Price, Arnould, and Tierney 1995). Third, fertility treatment is a high-risk service, which is defined as a service that is as likely to fail as to succeed, regardless of the effort invested by the service provider (Zayer, Otnes, and Fischer 2015). Fourth, it is considered a conversational taboo, meaning that social conventions restrict the freedom to talk openly about fertility treatment (Sabri, Manceau, and Pras 2010).

In this dissertation, the researcher takes different perspectives on this issue to gain a comprehensive understanding of how patients experience infertility and fertility treatment. Each empirical paper of this dissertation focuses on one of the latter three characteristics of fertility treatment, while its characteristic as a high-emotion service is evident in all three papers (see Figure 1). This dissertation contributes to transformative service research by responding to the call for research on designing services for vulnerable consumers (Ostrom et al. 2015) and reducing barriers to the use of such services (Ostrom et al. 2021).

Figure 1. Focus of Empirical Research Papers



2 Medical Background

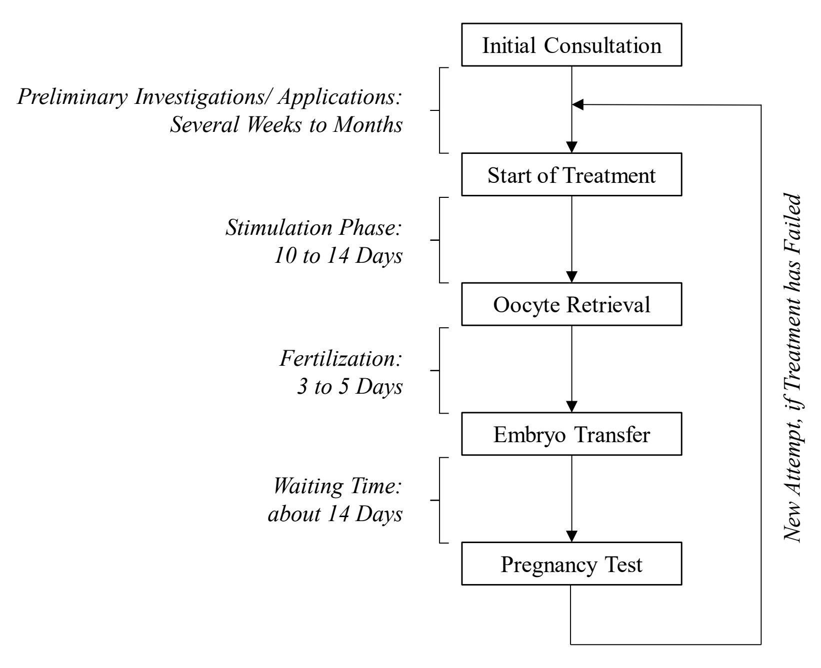
This section provides background information on infertility and treatment options, which support the understanding of the following empirical research papers.

According to the World Health Organization (WHO) and the International Committee for Monitoring Assisted Reproductive Technology, a couple is considered infertile if pregnancy is not achieved after twelve or more months of regular, unprotected intercourse (Zegers-Hochschild et al. 2009). From ovulatory disorders on the female side to disorders in sperm production on the male side, various conditions prevent a couple from conceiving a child naturally (Dickey and Brinsden 2010; Gurkan, Bowen, and Hellstrom 2010). For couples affected, fertility treatment is often the only way to overcome involuntary childlessness.

The term “fertility treatment” covers various methods. Fertility treatments in Germany range from hormonal treatments, to intrauterine insemination (IUI) and artificial fertilization in the form of in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI). The purpose of hormonal treatment is to have a positive influence on a woman’s cycle and thus enable her to become pregnant naturally. Moreover, it is usually carried out in parallel with other treatment methods. In IUI, the processed male sperm cells are inserted into the female uterus with the help of a catheter—a surgical operation is not necessary. The success rate of this method, at approximately 7% to 12% (The ESHRE Capri Workshop Group 2009), is significantly lower than that of artificial fertilization, at approximately 32% (Barnitzky et al. 2021). In artificial fertilization, the fertilization takes place outside the woman's body. Oocytes are collected from the woman's body during a surgical procedure and brought together with the man's semen. After fertilization, the embryos are transferred back into the uterus. The difference between IVF and ICSI is that ICSI involves the sperm being injected directly into the egg with a needle instead of just being brought into close proximity. Figure 2 illustrates a typical IVF or ICSI procedure. Both IUI and artificial fertilization can be performed in Germany with the sperm of the partner or with that of a donor, while egg donation (in contrast to other European countries) is not permitted (ESHRE 2017).

One cycle of fertility treatment costs several thousand euros, and these costs are rarely covered in full by health insurance policies. The financing is not regulated uniformly in Germany: Most statutory health insurance policies cover 50% of the costs for a limited number of attempts (usually three), but some patients have no financial support, for example if they are not married or have exceeded a certain age limit (ESHRE 2017).

Figure 2. Typical Procedure of an IVF/ICSI Cycle



3 Infertility – a Fertile Field for Marketing Research?

In the 1970s, Bagozzi and van Loo (1978) claimed that “fertility is […] intimately related to consumption and opens a new area for consumer research” (p.199). Since the market for reproductive medicine is booming, with a current annual value of US$27 billion (Femtech Analytics 2021), this holds true more than ever. In the 1990s, reproductive medicine entered the realm of marketing and consumer research (e.g., Hirschman 1991; Kaplan et al. 1992; Lytle and Mokwa 1992; Valerius 1997). In the early years, research focused on the economic perspective, investigating how to improve service quality to succeed in the highly competitive market (Keck and Alper 2005, 2006; Lytle and Mokwa 1992) and discussing marketing strategies such as “a live baby or your money back” (Schmittlein and Morrison 2003) and the ethical question of the commercialization of reproductive medicine (Hirschman 1991; Valerius 1997). In recent years, however, the research focus has shifted to the consumer’s perspective. For instance, researchers have investigated patients’ need for education and support (Wingert et al. 2005), their persistence and how they cope with failures (Fischer, Otnes, and Tuncay

2007; Zayer, Otnes, and Fischer 2015), their vulnerability (Gezinski et al. 2017; Robertson et al. 2021; Takhar and Pemberton 2019), and patients' processing of experiences in memoirs (Takhar 2021).

Only recently, however, did Takhar and Houston (2021) review the evolution of fertility treatment and its meaning for marketing scholarship and come to the conclusion that it remains underexplored. Although it is a billion-dollar market, research on reproductive medicine is still rare and superficial in the fields of marketing, service, and consumption—making it a fertile field for current research.

4 Structure of the Dissertation

This dissertation is organized as follows. Following the introduction in Part A, three empirical research papers are presented in Parts B, C, and D: (1) *Patients' Emotional Distress and Needs – Phase-specific Differences during Fertility Treatment*; (2) *Coping with Uncertainty in High-Risk Services*; and (3) *#infertility – Dealing with Taboo Topics on Social Media*. Finally, Part E summarizes the core results of the dissertation and discusses them against the background of theory and practice. Limitations of the studies are pointed out, and an outlook for future research is given.

4.1 Paper 1: Fertility Treatment as a Temporally Extended Service

The first paper of this dissertation, entitled *Patients' Emotional Distress and Needs – Phase-specific Differences during Fertility Treatment*, focuses on fertility treatment as a temporally extended service, suggesting that patients' well-being may change over time. However, related research is limited (see Verhaak et al. 2007 for an overview). This study examines different stages of the patient journey, surveying infertility patients at the initial consultation, start of treatment, oocyte retrieval, and embryo transfer and during the first and follow-up treatment cycles. The paper aims to answer the following research question:

How do emotional distress and fertility-related needs evolve (1) over the course of a treatment cycle and (2) across multiple treatment cycles?

Figure 3 provides an overview of the study.

Figure 3. Overview of Empirical Research Paper 1

Perspective:	Fertility treatment as a temporally extended service
Purpose:	Explore the extent to which emotional distress and fertility-related needs change along the patient journey
Method:	Cross-sectional self-reports survey
Sample:	N = 212; M_{age} = 35.3 years; 56.6% female; infertility patients

4.2 Paper 2: Fertility Treatment as a High-Risk Service

The second paper, entitled *Coping with Uncertainty in High-Risk Services*, explores fertility treatment as a service in which the probability of failure is inherently high. Researchers have comprehensively studied uncertainty in consumers' decision-making (e.g., Bordley 2001; Lipshitz and Strauss 1997) and how they cope with service failures (e.g., Gabbott, Tsarenko, and Mok 2011; Gelbrich 2010; Strizhakova, Tsarenko, and Ruth 2012), but little is known about how consumers cope with uncertainty while waiting for a service outcome. This paper addresses this research gap, building on 23 in-depth interviews with infertility patients to answer the following research question:

How do consumers cope with uncertainty in high-risk services?

Figure 4 provides an overview of the study.

Figure 4. Overview of Empirical Research Paper 2

Perspective: Fertility treatment as a high-risk service

Purpose: Investigate the coping behavior of fertility patients while experiencing uncertainty concerning the treatment outcome

Method: Semi-structured in-depth interviews

Sample: N = 23; M_{age} = 35.1 years;
all female; infertility patients

4.3 Paper 3: Fertility Treatment as a Conversational Taboo

The third paper, entitled *#infertility – Dealing with Taboo Topics on Social Media*, focuses on fertility treatment as a conversational taboo. While taboo topics used to be discussed behind closed doors—for instance, in secluded online forums (Veer and Golf-Papez 2018)—they have recently begun to be discussed in public social media platforms. The aim of this research is to outline the potential of this development with regard to the well-being of consumers confronted with taboos. The paper reports a netnographic study analyzing infertility-related YouTube videos from various infertility bloggers. The research question is formulated as follows:

How can public social media channels contribute to the well-being of consumers confronted with taboo topics and suffering from stigmatization?

An overview of the study is given in Figure 5.

Figure 5. Overview of Empirical Research Paper 3

Perspective:	Fertility treatment as a conversational taboo
Purpose:	Explore how public social media channels contribute to the well-being of consumers confronted with taboos
Method:	Netnographic study
Sample:	N = 5; M_{age} = unknown; all female; social media bloggers affected by infertility

B Empirical Research Paper 1: Patients’ Emotional Distress and Needs – Phase-specific Differences during Fertility Treatment

Abstract

Many patients describe fertility treatment as an “emotional rollercoaster,” implying that the level of emotional distress varies along the patient journey. Research suggests that the waiting time between embryo transfer and pregnancy test is perceived as particularly stressful, and similar effects have been observed during the time before oocyte retrieval. Moreover, emotional distress is assumed to increase with ongoing treatment cycles. However, little is known about the needs of patients in the respective phases. In this study, based on data from a cross-sectional self-report survey with patients in different phases of treatment, the levels of distress and infertility-related needs were compared. It was found that female patients suffer most from emotional distress before the initial consultation and before embryo transfer, phases that are accompanied by the strongest need for information and emotional support, respectively. Moreover, emotional distress of both female and male patients in follow-up treatments is higher than in the first treatment cycle. Both the phase before the initial consultation, which is characterized by a lack of information, and the phase before the embryo transfer, which is characterized by a risk of failure, seem to drive emotional distress, and fertility clinics are recommended to directly address infertility patients’ needs to relieve their distress.

Additional Note:

- This (unpublished) paper co-authored by Sören Köcher (Otto-von-Guericke University Magdeburg), Sarah Köcher (TU Dortmund University) and Stefan Dieterle (University of Witten/Herdecke) has been written for publication in a medical journal. Please note that the requirements differ from those in the marketing discipline.
- Parts of this paper were presented at
  - 7. Rostocker Dienstleistungstagung; Rostock, Germany; September 2021

1 Introduction

Infertility is one of the most distressing experiences a human can undergo, similar to the death of a loved one or a divorce (Baram et al. 1988), and this distress is also one of the most decisive reasons patients discontinue treatment prematurely (i.e., before completing three treatment cycles) (Brandes et al. 2009; Gameiro et al. 2012). As well as the physical burden during treatment, patients experience emotional strain, depression, anxiety, and psychological burden (e.g., Gameiro et al. 2012; Holter et al. 2006; Verhaak et al. 2005). In accordance with Brandes et al. (2009), we group these negative emotions involved in fertility treatment under the umbrella term "emotional distress." As infertility patients usually have to undergo multiple treatment cycles (which can take several years until the patients finally conceive or decide to give up on their wish for their own child), the high level of emotional distress together with the long duration of treatment suggest that infertility patients experience several highs and lows accompanied by different needs during their fertility treatment journey.

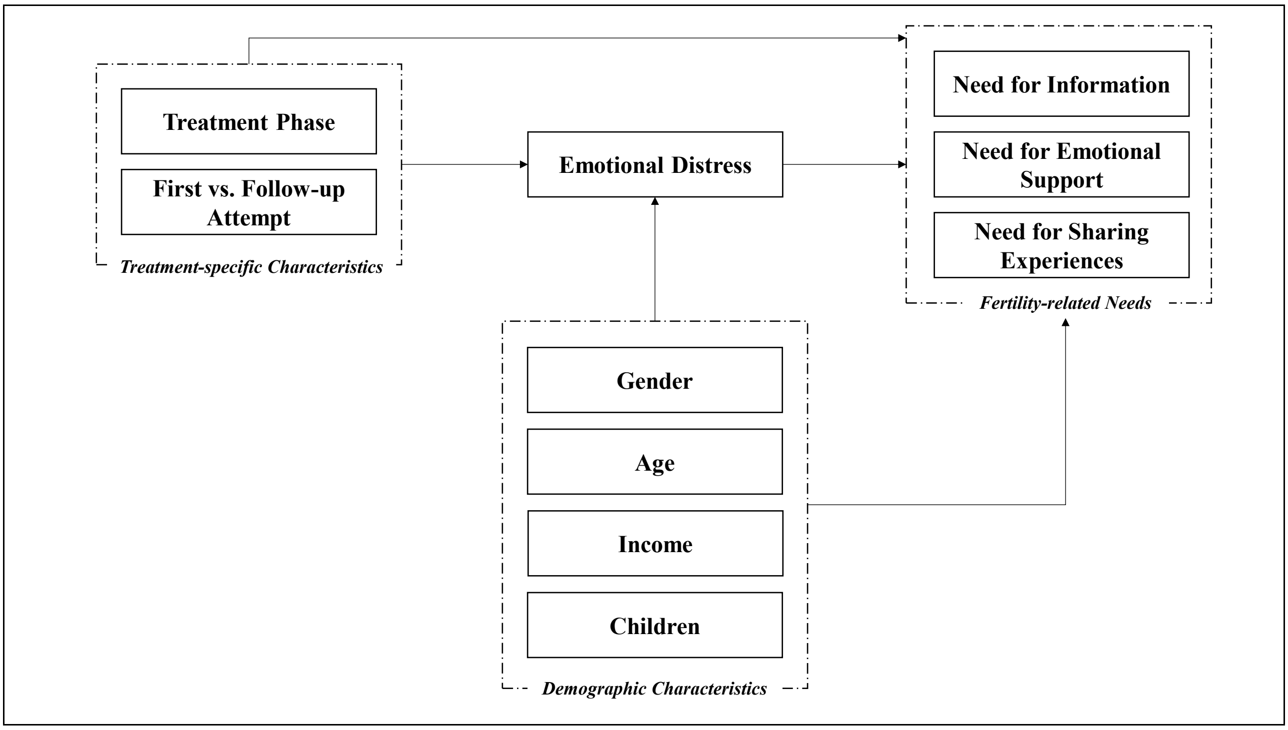
In previous research, patients' emotional responses to fertility treatment over time have received considerable attention (see Verhaak et al. 2007 for an overview). For instance, it was found that the waiting time between embryo transfer and pregnancy test is perceived as particularly stressful, and similar effects have been observed during the time before oocyte retrieval (Tuil et al. 2009; Verhaak et al. 2007). Most studies, however, focus solely on the actual treatment cycle, neglecting the time before and after the initial consultation (i.e., the first appointment at the fertility clinic). We want to emphasize the importance of this phase, as a considerable number of patients decide against treatment in this phase—for example, for organizational or financial reasons, but also due to emotional distress (Brandes et al. 2009). Moreover, most studies neglect the emotional distress experienced by male partners during fertility treatment. As well as its development within one treatment cycle, previous research suggests that emotional distress becomes more dominant over several treatment cycles

(Verhaak et al. 2005; Verhaak et al. 2007), while perceived social support—which could potentially reduce emotional distress—decreases after several attempts (Agostini et al. 2011).

In contrast to emotional distress, the development of infertility-related needs over time has been widely neglected in previous research. Read et al. (2014) consider the need for information, the need for emotional support, and the need for sharing experiences as crucial for infertility patients. This broadly aligns with three of the categories defined by Gameiro et al. (2015), who have been the only researchers so far to attempt to assign infertility-related needs to treatment-specific phases: Cognitive needs resemble the need for information, emotional needs correspond to the need for emotional support, and social needs include the desire for sharing experiences. However, they only differentiate between the pre-treatment, treatment, and post-treatment phases. Thus, a more nuanced view of the treatment phase, in which emotional distress and infertility-related needs are investigated jointly across the same treatment phases, seems appropriate. Concerning the relation between emotional distress and infertility-related needs, Read et al. (2014) suggest that infertility patients need different kinds of support depending on the level of emotional distress. However, the concrete relation between emotional distress and different infertility-related needs has—to the best of our knowledge—not yet been investigated.

Adding to prior research on infertility patients' emotional response to fertility treatment in different phases of treatment, the current study explores the extent to which female and male patients' emotional distress and infertility-related needs (i.e., need for information, emotional support, and sharing experiences) differ (1) depending on the phase of a treatment cycle and (2) between the first and a follow-up treatment cycle. Figure 6 provides an overview of the focal aspects of this study. The research is of relevance for both theoretical and managerial perspectives. First, this article complements the literature on the phase-specific differences in infertility patients' emotional distress and needs, especially with regard to the previously neglected male perspective, and it explores the relation between the two constructs. Second, as emotional distress is one of the main reasons for discontinuation of treatment (Brandes et al. 2009; Gameiro et al. 2012), support from fertility clinics is necessary to relieve patients and thus prevent premature discontinuation. Our research provides guidance on how to better support couples undergoing fertility treatment in specific phases.

Figure 6. Focal Aspects of the Study



2 Material and Methods

2.1 Data Collection

We conducted a cross-sectional survey with 212 infertility patients at fertility clinics in Dortmund, Siegen, and Wuppertal, Germany, between June and September 2020. Patients who met the inclusion criteria were asked to participate in the study by their treating physician after their appointment. Inclusion criteria were as follows: (1) Patients had visited the fertility clinic (a) for initial consultation, (b) to discuss the start of treatment (usually a few days before the first injection), (c) for oocyte retrieval, or (d) for embryo transfer; (2) patients were undergoing in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) (this criterion did not apply to patients who had just had the initial consultation, as most of them had not finally decided on the treatment method); (3) patients were heterosexual; and (4) patients were German-speaking. As soon as the target sample size of 30 female and male patients per treatment phase was reached, we stopped the active acquisition of further patients of the respective group.

Those who expressed their willingness to participate to their physician were guided to a separate room to meet the researcher and received further information. None of the patients withdrew from participation at this time. After informed consent was obtained, the paper-and-pencil questionnaire was filled out in the presence of the researcher. We chose this approach to ensure a conscientious completion of the questionnaire and to provide support if necessary. Despite COVID-19-related precautions (i.e., safe distance was maintained and the researcher and participants wore masks), personal contact between the researcher and the participants was possible, which is why we assume that the pandemic did not have a major impact on the data collection process. The information collected in the questionnaire can be assigned to the categories of demographic information, treatment-specific information, and emotional distress and infertility-related needs. An overview of the measures used to capture the relevant variables is given in Table 1.

Demographic Information

Data on the following demographics were collected: gender, age, education, income, length of time spent trying to conceive, whether the participant already had children (conceived naturally or with reproductive assistance), and insurance coverage for the costs of the fertility treatment.

Treatment-specific Information

Participants were also asked about their fertility treatment. This includes the current phase of treatment (initial consultation, start of treatment, oocyte retrieval, or embryo transfer) and previous attempts of the same and different treatment methods, including successful treatments that led to pregnancy and child birth.

Emotional Distress and Needs

Patients were asked about the emotional distress and the infertility-related needs they experienced since the last appointment at the fertility clinic (or since arranging the appointment, if patients had just had the initial consultation). Patients' self-report of emotional distress was measured on a 7-point Likert scale (ranging from 1 = *very low* to 7 = *very high*). Participants' need for information, for emotional support, and for sharing experiences was captured on a similar scale (ranging from 1 = *very weak* to 7 = *very strong*). Previous research identified these three needs as the most relevant needs of infertility patients (Read et al. 2014). To obtain a more detailed picture of how patients cope with their need for information, participants were asked about their information behavior (i.e., time spent searching for information, sense of being informed).

2.2 Ethical Approval

The study protocol received approval by the Ethics Committee of the University of Witten-Herdecke (reference S-149/2021).

Table 1. Measures Used in Questionnaire

Emotional distress and needs	
Need for information How would you assess your need for information before today's appointment?	7-point Likert scale, where 1 means *very weak* and 7 means *very strong*
Information search How much time have you spent searching for information before today's appointment?	Indication in hours
Sense of being informed How well-informed did you feel before today's appointment?	7-point Likert scale, where 1 means *not well-informed at all* and 7 means *very well-informed*
Need for emotional support How would you assess your need for emotional support before today's appointment?	7-point Likert scale, where 1 means *very weak* and 7 means *very strong*
Need for sharing experiences How would you assess your need for sharing experiences before today's appointment?	7-point Likert scale, where 1 means *very weak* and 7 means *very strong*
Emotional distress How do you perceive the emotional distress related to your wish for a child?	7-point Likert scale, where 1 means *very low* and 7 means *very high*
Demographic information	
Gender Gender	Male/ Female
Age How old are you?	Indication in years

Table 1. Measures Used in Questionnaire *(continued)*

Income	
How much is the monthly net income in your household?	<€2,000/ €2,000 – <€3,000/ €3,000 – <€4,000/ €4,000 – <€6,000/ ≥€6,000
Education	
What is your highest educational qualification?	No graduation/ Diploma of “Hauptschule”/ Diploma of “Realschule”/ “Fachhochschulreife”/ “Allgemeine Hochschulreife”/ Bachelor or Master degree (“Fachhochschule”)/ Bachelor or Master degree (University)
Treatment-specific information	
Wish for a child	
How long have you wished for a child?	Indication in years
Children	
Do you already have a child?	No/ Yes, conceived through fertility treatment/ Yes, conceived naturally
Number of prior attempts	
How many times have you undergone IVF/ ICSI before? (Include previous successful treatments, if any.)	0/ 1/ 2/ ____
Previous treatments	
Have you previously undergone a different kind of fertility treatment?	No/ Yes, hormonal treatment/ Yes, insemination (IUI)/ Yes, ____

Table 1. Measures Used in Questionnaire *(continued)*

Health insurance coverage	
How do you finance the current treatment?	Our health insurance covers all costs./ Our health insurance covers part of the costs; we pay the rest ourselves./ We pay all the costs ourselves.

Note: Before patients started the survey, it was emphasized that all questions refer to the time between the last appointment (or the arrangement of the appointment for those who had just had the initial consultation) and the appointment on the day of the survey.

2.3 Statistical Analyses

The questionnaires were manually transferred into SPSS. Those participants who did not answer the essential questions on emotional distress, infertility-related needs, gender, number of previous treatments, and children were excluded from all analyses (phase of treatment was also essential information but was noted on the questionnaire by the researcher before handing it out). Those who failed to answer non-essential questions (e.g., time spent searching for information or the net household income) were excluded only from the analyses in which the respective measure was of relevance. After a comprehensive descriptive analysis, several ANOVAs and follow-up contrast analyses were performed to test for differences in emotional distress depending on treatment-specific (phase of treatment, first vs. follow-up attempt) and demographic characteristics (gender, age, income, children). We ran the same analyses with need for information, need for emotional support, and need for sharing experiences as dependent variables.

In a second step, we assessed the correlations between emotional distress and the infertility-related needs. Subsequently, we analyzed the correlations between the need for information and the extent of information search and between the extent of information search and patients' sense of being informed.

3 Results

3.1 Sample

In total, 221 infertility patients took part in the study. Nine incomplete questionnaires were excluded from further analysis because essential questions were not answered by the participant. Of the remaining 212 participants, 120 were female (56.6%). The average age was 35.3 years (±4.90). The median net household income was between €4,000 and €6,000 per month; the median educational level was high school diploma.

The average time spent trying to conceive was 3.2 years (±2.34). Among the study participants, 23.6% already had at least one child, 44.9% of them with assisted reproductive treatments. In 30.2%, health insurance covered the entire costs of the treatment, while 14.6% of the patients did not receive any funding from their insurance. In most cases (53.2%), however, the health insurance covered at least part of the costs.

Participants were in different phases of treatment (i.e., initial consultation, start of treatment, oocyte retrieval, or embryo transfer). While female patients were equally represented in all four phases (30 women in each of the four phases), men were predominantly surveyed at initial consultation (*n* = 30), oocyte retrieval (*n* = 34), and embryo transfer (*n* = 19). Because appointments at the start of treatment were often attended by female patients only, we only obtained data from nine male participants in this treatment stage. For most patients (59.0%), it was their first IVF or ICSI treatment cycle; others had undergone up to ten previous attempts. Of all the participants, 32.0% had already undergone another treatment method; for instance, insemination or hormonal treatment. An overview of the sample’s characteristics is given in Table 2.

Table 2. Demographic and Treatment-Specific Characteristics of the Sample

	%	n
Gender (n = 212)		
Female	**56.6**	**120**
Male	**43.4**	**92**
Age (in years) (n = 210)		
< 30	**10.0**	**21**
30-34	**35.7**	**75**
35-39	**36.7**	**77**
≥ 40	**17.6**	**37**
Education (n = 212)		
< High school diploma[1]	**23.6**	**50**
High school diploma[2]	**30.6**	**65**
Bachelor/ Master degree[3]	**45.8**	**97**
Net household income (in €) (n = 194)		
< 2000	**4.1**	**8**
2000-2999	**10.3**	**20**
3000-3999	**26.8**	**52**
4000-5999	**43.3**	**84**
≥ 6000	**15.5**	**30**
Time trying to conceive (in years) (n = 212)		
≤ 1	**13.7**	**29**
> 1-3	**59.9**	**127**
> 3	**26.4**	**56**
Children (n = 212)		
None	**76.4**	**162**
With reproductive medicine	**10.4**	**22**
Conceived naturally	**12.7**	**27**
Health insurance coverage (n = 203)		
Full	**31.5**	**64**
Partial	**53.2**	**108**
No coverage	**15.3**	**31**
Treatment phase (n = 212)		
Initial consultation	**28.3**	**60**
Start of treatment	**18.4**	**39**
Oocyte retrieval	**30.2**	**64**
Embryo transfer	**23.1**	**49**
Previous attempts (n = 212)		
First attempt	**59.0**	**125**
Follow-up attempt	**41.0**	**87**
Tried other methods before (n = 206)		
Yes	**32.0**	**66**
No	**68.0**	**140**

Notes: [1] Includes no graduation, diploma of "Hauptschule,", and diploma of "Realschule"; [2] includes "Fachhochschulreife" and "Allgemeine Hochschulreife"; [3] includes Bachelor or Master degree ("Fachhochschule") and Bachelor or Master degree (University).

3.2 Emotional Distress

The ANOVA showed that emotional distress significantly differed among female patients depending on the phase of the treatment cycle [F(3, 116 = 2.82, $p < .05$, $\eta^2 = .07$]; see Figure 7. Specifically, female patients suffered most from emotional distress before the initial consultation [M = 5.13 ±1.57] and between oocyte retrieval and embryo transfer [M = 5.33 ±1.63], while the emotional distress before the start of treatment [M = 4.47 ±2.13] and before oocyte retrieval [M = 4.20 ±1.63] was less pronounced. In contrast, among the male partners, we found no significant differences in emotional distress between initial consultation, oocyte retrieval, and embryo transfer [F(2, 80) = .83, $p = .44$; we excluded the nine male respondents who were interviewed at the start of treatment because this phase was underrepresented in the male sample; including them in the analysis did not change this result].

Comparing the level of emotional distress depending on the number of previous attempts, we found a marginally significant difference between patients during their first treatment cycle and patients during a follow-up attempt [F(1, 150) = 2.91, $p < 0.10$, $\eta^2 = .02$; sixty patients who were surveyed at initial consultation were excluded from this analysis because there is no comparable phase in follow-up treatments]; indicating that patients experienced lower emotional distress during their first treatment[M = 4.16 ±1.72] than during a follow-up treatment [M = 4.67 ±1.92]. The strength of this effect is not significantly different between female and male participants [F(1, 148) = .22, $p = .64$].

Considering the effect of demographic characteristics on patients' emotional distress, we found that, overall, women [M = 4.78 ±1.79] felt significantly more stressed during fertility treatment than men [M = 4.09 ±1.83; F(1, 210) = 7.71, $p < .01$, $\eta^2 = .04$]. Emotional distress was negatively correlated with patients' age [$r_{\text{Pearson}} = -.19$, $p < .01$]. Furthermore, patients' emotional distress was negatively correlated with patients' income [$r_{\text{Spearman}} = -.15$, $p < .05$], indicating that financial concerns may play a role here. Emotional distress was marginally lower for patients who already had a child [M = 4.08 ±2.11] than for other patients [M = 4.60 ±2.11;

F(1, 210) = 3.15, $p < .10$, $\eta^2 = .02$]. A further analysis of this effect revealed that having a child who had been conceived naturally [M = 4.89 ±1.85] did not lead to lower emotional distress [F(1, 209) = .59, $p = .44$] , compared to having a child who had been conceived through fertility treatment [M = 3.13 ±2.03; F(1, 209) = 15.15, $p < .01$, $\eta^2 = .07$]. A summary of our results is shown in Table 3.

Figure 7. Female Patients' Emotional Distress and Needs in Different Phases

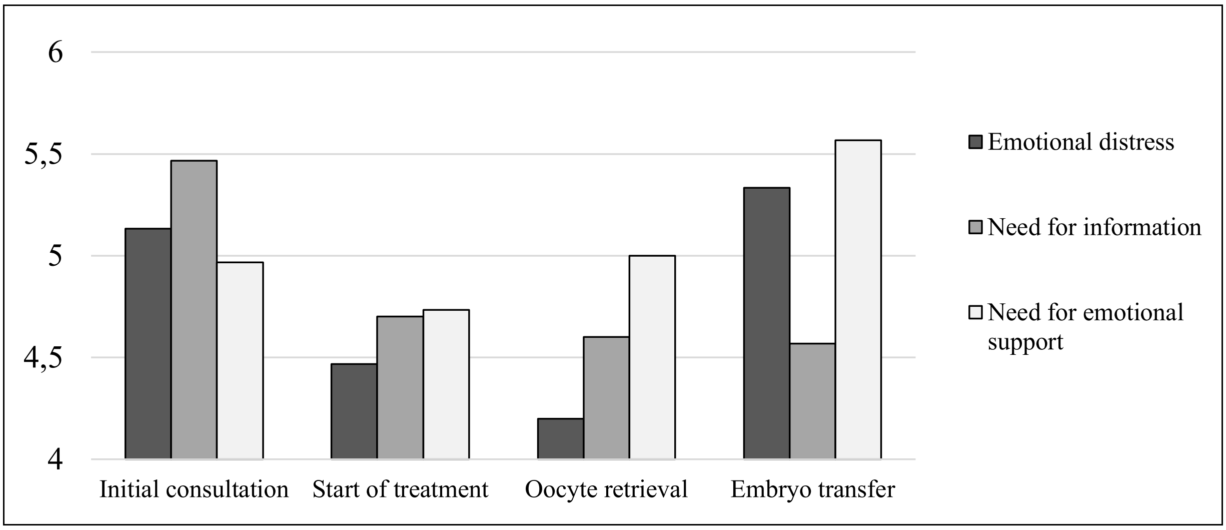


Table 3. Factors Affecting Infertility Patients' Emotional Distress and Needs

	Emotional distress		**Need for information**		**Need for emotional support**		**Need for sharing experiences**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Treatment phases (female patients)								
Initial consultation	**5.13^{a}**	**1.57**	**5.47^{ab}**	**1.68**	**4.97**	**1.47**	**4.83**	**1.84**
Start of treatment	**4.47^{b}**	**2.13**	**4.70**	**1.97**	**4.73^{a}**	**1.95**	**4.90**	**1.85**
Oocyte retrieval	**4.20^{ac}**	**1.63**	**4.60^{a}**	**1.81**	**5.00**	**1.60**	**4.50**	**1.83**
Embryo transfer	**5.33^{bc}**	**1.79**	**4.57^{b}**	**1.83**	**5.57^{a}**	**1.46**	**5.30**	**1.78**
F-value	**2.82**		**1.64**		**1.41**		**.97**	
p-value	**.04**		**.19**		**.24**		**.41**	
Effect size	**.07**		**.04**		**.04**		**.02**	
Treatment phases (male patients)								
Initial consultation	**3.97**	**1.90**	**4.50**	**1.85**	**3.10**	**1.78**	**3.50**	**2.05**
Start of treatment	**-**		**-**		**-**		**-**	
Oocyte retrieval	**4.21**	**1.87**	**4.50**	**1.73**	**3.79**	**1.65**	**3.91**	**1.76**
Embryo transfer	**3.53**	**1.68**	**4.39**	**1.67**	**3.47**	**1.78**	**3.68**	**1.80**
F-value	**.83**		**.65**		**1.29**		**.39**	
p-value	**.44**		**.53**		**.28**		**.68**	
Effect size	**.02**		**.02**		**.03**		**.01**	
Number of prior treatments								
First treatment[1]	**4.16^{a}**	**1.72**	**4.80**	**1.57**	**4.39**	**1.71**	**4.45**	**1.65**
Follow-up treatment	**4.67^{a}**	**1.92**	**4.44**	**1.86**	**4.63**	**1.88**	**4.42**	**2.03**
F-value	**2.91**		**1.52**		**.62**		**.01**	
p-value	**.09**		**.22**		**.43**		**.92**	
Effect size	**.02**		**.01**		**.00**		**.00**	

Table 3. Factors Affecting Infertility Patients' Emotional Distress and Needs *(continued)*

	Emotional distress		**Need for information**		**Need for emotional support**		**Need for sharing experiences**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Children								
Conceived through fertility treatment	**3.13^{ab}**	**2.03**	**3.65^{ab}**	**2.01**	**3.83^{a}**	**1.75**	**3.87**	**2.30**
Conceived naturally	**4.89^{a}**	**1.85**	**4.96^{a}**	**1.79**	**3.96**	**2.16**	**4.48**	**1.67**
No children	**4.61^{b}**	**1.74**	**4.81^{b}**	**1.69**	**4.54^{a}**	**1.78**	**4.41**	**1.91**
F-value	**7.70**		**4.79**		**2.354**		**.85**	
p-value	**.00**		**.01**		**.10**		**.43**	
Effect size	**.07**		**.04**		**.02**		**.01**	
Gender								
Female	**4.78^{a}**	**1.79**	**4.83**	**1.84**	**5.07^{a}**	**1.64**	**4.88^{a}**	**1.83**
Male	**4.09^{a}**	**1.83**	**4.53**	**1.67**	**3.50^{a}**	**1.71**	**3.67^{a}**	**1.84**
F-value	**7.71**		**1.50**		**45.77**		**22.703**	
p-value	**.01**		**.22**		**.00**		**.00**	
Effect size	**.04**		**.01**		**.18**		**.01**	
Age (correlation)[2]	**-.19****		**-.04**		**-.14***		**-.15***	
Income (correlation)[2]	**-.15***		**-.17***		**-.07**		**-.05**	

Notes: Within blocks, mean values that share the same superscript are significantly different at $p < .10$. [1] Sixty respondents who were interviewed at initial consultation were excluded from this analysis because there is no comparable phase in follow-up treatments. [2] Correlations marked with ** are significant at $p < .01$; correlations marked with * are significant at $p < .05$.

3.3 Infertility-Related Needs

Women's need for information was strongest before the initial consultation [M = 5.47 ±-1.68] , and comparatively low during the advanced treatment phases [M = 4.62 ±1.85; F(1, 116) = 4.82, $p < .05$, $\eta^2 = .04$]; see Figure 7. Their need for emotional support, on the other hand, was comparatively low during the first treatment phases [M = 4.90 ±1.67] and highest before embryo transfer [M = 5.57 ±1.45; F(1, 116) = 3.76, $p < .10$, $\eta^2 = .03$]. In contrast, the need for sharing experiences did not differ between the treatment phases [F(3, 116) = .97, $p = .41$]. Considering the male partners, we found no significant difference in the infertility-related needs between initial consultation, oocyte retrieval, and embryo transfer [all Fs < 1.29, all *ps* > .28]. In addition, none of the needs differed significantly across multiple treatment cycles [all Fs < 1.52, all *ps* > .21; again, we excluded 60 patients from the analysis who were interviewed at initial consultation because there is no comparable phase in follow-up treatments].

In regard to demographic characteristics, female patients [M = 5.07 ±1.64] generally had a stronger need for emotional support than male partners [M = 3.50 ±1.71; F(1, 211) = 45.77, $p < .01$, $\eta^2 = .18$]. Similarly, the need for sharing experiences was more pronounced for female patients [M = 4.88 ±1.83] than for their male partners [M = 3.67 ±1.84; F(1, 211) = 22.70, $p < .01$, $\eta^2 = .10$], while there was no significant difference in the need for information [F(1, 211) = 1.50, $p = .22$]. Among patients who already had a child who had been conceived through fertility treatment [M = 3.65 ±2.01] the need for information was lower than for other patients [M = 4.83 ±1.70; F(1, 209) = 9.25, $p < .01$, $\eta^2 = .04$]. In contrast, the need for emotional support for those who already had a child [M = 3.90 ±1.96] was lower than for those without a child [M = 4.54 ±1.78; F(1, 209) = 4.70, $p < .05$, $\eta^2 = .02$] independently of whether the child had been conceived through fertility treatment or naturally. We found no effect on the need for sharing experiences [F(1, 211) = .85, $p = .43$].

3.4 The Relationship between Emotional Distress and Infertility-Related Needs

Emotional distress during fertility treatment was positively correlated with all of the three infertility-related needs, indicating that emotional distress increased patients' needs for information, emotional support, and sharing experiences. The correlation with the need for emotional support [$r_{\text{Pearson}} = .49, p < .01$] and for sharing experiences [$r_{\text{Pearson}} = .44, p < .01$] was remarkably higher than the correlation with the need for information [$r_{\text{Pearson}} = .29, p < .01$].

3.5 Follow-up Analysis

In a follow-up analysis, we further examined patients' need for information. We found that the need for information was positively correlated with information search [$r_{\text{Pearson}} = .31, p < .01$; two participants were excluded from this analysis because the self-reported extent of information search was more than 4 SDs away from the overall mean, including them in the analysis did not change this result], . The extent of information search, in turn, was not correlated with the sense of being informed [$r_{\text{Pearson}} = -.01, p = .85$], indicating that despite intensively seeking information patients did not feel better informed. Nevertheless, the sense of being informed before initial consultation [M = 4.15 ±1.56] was significantly lower than in the following phases [M = 5.88 ±1.18; $F(1, 208) = 74.62, p < .01, \eta^2 = .26$]. In the three phases after initial consultation, the sense of being informed did not differ significantly [all Fs < .11, all *ps* > .74].

4 Discussion

The purpose of this study was to improve the understanding of the extent to which infertility patients' emotional distress and infertility-related needs (i.e., need for information, emotional support, and sharing experiences) differ depending on the treatment phase by surveying patients in different stages of a treatment cycle (i.e., initial consultation, start of treatment, oocyte retrieval, embryo transfer) as well as patients in different treatment cycles (i.e., first attempt, follow-up attempt). The following sections discuss the key contributions of this work.

First, supporting previous research on this topic (e.g., Reis et al. 2013; Verhaak et al. 2005; Verhaak et al. 2007), we found that emotional distress was higher for patients who had already underwent one or several treatment cycles that failed. In addition, we found that women generally felt more stressed than men, which was also consistent with previous studies (e.g., Holter et al. 2006; Peterson et al. 2014; Reis et al. 2013). However, while it is suggested that women's level of emotional distress remains constant during a treatment cycle—despite a slight increase at oocyte retrieval and the peak before pregnancy test (Verhaak et al. 2007)—our study showed that female patients in the phases before initial consultation and between oocyte retrieval and embryo transfer experienced higher emotional distress than those in the phase between initial consultation and oocyte retrieval. The comparatively high level of emotional distress prior to initial consultation adds an interesting new perspective, as it seems surprising against the background of previous research that found that women in this phase do not experience particularly high levels of distress compared to fertile women (Gameiro et al. 2015). In regard to the previously neglected male partner's emotional response to fertility treatment in different phases, we could not identify significant differences depending on the phase of treatment within one cycle. Based on this, we highlight the existence of differences between female and male infertility patients not only with regard to the general level of distress (i.e., women experience higher levels of distress than their partners; see also Holter et al. 2006; Peterson et al. 2014; Reis et al. 2013), but also with regard to specific phases, which are perceived as comparatively more distressing by women, but not by men.

Second, previous research has rarely examined how infertility-related needs differ depending on the treatment phase. We found that female patients had the strongest need for emotional support in the phase between oocyte retrieval and embryo transfer, which may be considered concerning, given that women report the lowest support in this phase (Boivin and Takefman 1996). The need for emotional support was in general more pronounced for female patients than for the male partners. Neither potential differences between female and male patients' needs nor the treatment phases have yet been considered in such detail (Gameiro et al. 2015). While previous research has found that the received support is lower for men than for women (Agostini et al. 2011), it remained unclear if this represents a problem or merely reflects men's lower need for emotional support. In addition, we found that female patients' need for information was comparatively high before the initial consultation, accompanied by a low sense of being informed—in contrast to the phases after the first appointment at the fertility clinic. It is plausible to assume that this difference is the result of the initial consultation rather than of self-organized search for information (e.g., on professional websites or online forums), because our findings reveal that even an extensive information search does not carry over to subjective feelings of informedness. The findings of Tuil et al. (2007) support our assumption, as they could not find a positive effect of using an internet-based personal health record on patients' subjective knowledge. These insights into the need for information are a valuable contribution to research, as cognitive needs seem to be underexplored compared to emotional needs (Gameiro et al. 2015).

Finally, bridging the gap between emotional distress and infertility-related needs, we found that the need for information, the need for emotional support, and the need for sharing experiences were more pronounced when emotional distress was high, suggesting possible coping mechanisms as a response to the experience of emotional distress. In a similar vein, our results may also suggest that uncertainty—regardless of its origin (e.g., due to a lack of information before initial consultation or during fertilization, which is inherently uncertain and uncontrollable)—is related to emotional distress. Knowing the cause of emotional distress at different stages of treatment enables patient support to be optimized by directly addressing the patients' respective needs.

4.1 Practical Implications

Our findings offer several important insights that may help fertility clinics to better understand patients' emotional distress and needs in different phases of treatment.

It has been suggested that support from the social environment can reduce the emotional distress experienced during fertility treatment (Martins et al. 2014). Fertility clinics can offer services that could additionally help to reduce patients' emotional distress and satisfy the need for emotional support (e.g., professional psychological care or social media platforms for patients to mentally support each other and exchange experiences). Given that emotional distress is one of the main reasons patients abandon treatment prematurely (Brandes et al. 2009; Gameiro et al. 2012) and clinics lose a considerable number of patients, efforts to provide such support seem essential, also from an economic perspective.

When providing such opportunities, fertility clinics should primarily target women—independently of their treatment phase. However, when developing supporting measures, providers should keep in mind that the time between oocyte retrieval and embryo transfer is particularly associated with high levels of emotional distress and a strongly pronounced need for emotional support. Furthermore, the high emotional distress experienced before the initial consultation is accompanied by a strong need for information, highlighting the necessity of providing easy access to infertility-related information for (potential) patients as early as possible and, importantly, before initial consultation.

4.2 Limitations and Future Research

This work is not without limitations that offer several worthwhile opportunities for future research. First, our study explores phase-specific differences in patients' emotional distress and needs by comparing groups of female and male patients in different phases of fertility treatment. However, although our findings suggest that these variables may vary over the course of a treatment, a more conservative test of dynamic changes would employ a longitudinal design. Thus, we encourage future researchers to investigate patients' emotional well-being by studying a constant group of participants multiple times over the course of a treatment.

Second, while our study uncovers differences in emotional distress across patients in different treatment phases, future research should try to develop a deeper understanding of this phenomenon. For instance, it would be interesting to investigate whether the factors responsible for the peaks in experienced distress (i.e., phases before initial consultation and before embryo transfer) are identical. Factors affecting emotional distress may include patients' worries about uncertain outcomes, financial concerns, or medication side effects. In particular, reaching a better understanding regarding phase-dependent sources of emotional distress could help to provide more effective support for patients in different phases of treatment.

Finally, the respondents in our study were all patients at the same fertility clinic, though with offices in different cities. Future research should test the generalizability of our findings by analyzing patients treated in different fertility clinics. In a similar vein, we consider the identification of potential cultural differences by studying infertility patients from different countries as a worthwhile route for future research.

4.3 Conclusion

By studying the differences in infertility patients' emotional distress and infertility-related needs in different phases of a treatment cycle and in the first and in follow-up treatment cycles, this article provides a deeper understanding of patients' emotional response to fertility treatments. Our findings indicate that female patients experience the time before initial consultation and the time between oocyte retrieval and embryo transfer as particularly stressful. The study thus offers valuable insights to help provide more effective mental support for infertility patients suffering from emotional distress.

C Empirical Research Paper 2: Coping with Uncertainty in High-Risk Services

Abstract

A large variety of services involve great uncertainty around whether the desired outcome will be achieved or not. This applies in particular to high-risk services which entail a high chance of failure and limited controllability. In the current work, the authors explore how consumers of high-risk services cope with this uncertainty in the context of reproductive medicine. The findings from 23 semi-structured in-depth interviews with infertility patients help uncover two dominant strategies of coping with the abeyance while waiting for the outcome of fertility treatment: (1) assessment of subjective probabilities and (2) expectation management. In addition, four more coping strategies were found to be applied by consumers who anticipated a negative outcome: (3) preparation, (4) risk reduction, (5) avoidance, and (6) emotional processing. The authors develop a model that shows how the identified coping strategies are related, considering the anticipated outcome.

The current work offers valuable theoretical, practical, and societal contributions. In the vein of transformative service research, this research contributes to enhancing the well-being of consumers of high-risk services. Furthermore, through developing a deep understanding of coping mechanisms, the authors formulate guidelines for providers of high-risk services to better support their consumers and offer recommendations for consumers themselves.

Additional Note:

- A prior version of this paper co-authored by Sören Köcher (Otto-von-Guericke University Magdeburg) and Sarah Köcher (TU Dortmund University) has been submitted to the *Journal of Service Research* (JSR), VHB Ranking: A. Although rejected, the paper's novelty has been commended and it has been invited to be submitted again.
- Parts of this paper were presented at
    - 17th International Research Symposium on Service Excellence in Management (QUIS 17); Valencia, Spain; January 2022
    - 2022 AMA Winter Academic Conference; Las Vegas, USA; February 2022
    - Frontiers in Service Conference 2022; Boston, USA; June 2022

1 Introduction

A large variety of services, such as healthcare services, offerings by dating or employment platforms, legal counseling, and weight loss programs, involve uncertainty around whether the desired outcome will be achieved or not. Such high-risk services are characterized by two main aspects: (1) They are at least as likely to fail than to succeed; and (2) the service provider cannot (or not fully) control the outcome (Zayer, Otnes, and Fischer 2015). For consumers, this uncertainty is likely to provoke high levels of distress and anxiety, especially if the consequences of an undesired outcome are perceived as severe (Sweeny and Cavanaugh 2012), for example, the treatment of a life-threatening disease with a chance of failure, or a legal dispute in which a defeat would result in high costs. Sometimes, the uncertainty regarding an outcome is even harder to stand than the actual undesired outcome itself (Sweeny and Falkenstein 2015).

While the extant literature includes numerous studies on uncertainty in consumers' decision-making—in the service context and beyond (e.g., Bordley 2001; Boshoff 2002; Cui, Bao, and Chan 2009; Hassan et al. 2013; Lipshitz and Strauss 1997; Sun, Keh, and Lee 2012)—as well as how they cope with service failures (e.g., Gabbott, Tsarenko, and Mok 2011; Gelbrich 2010; Strizhakova, Tsarenko, and Ruth 2012), little is known about how consumers of a high-risk service cope with the uncertainty regarding the outcome. In other words, while it is well known how consumers deal with unfavorable service outcomes, their mindset during the period of uncertainty while awaiting the outcome remains largely unexplored. Most high-risk services involve temporal divergence between the first service encounter and the final outcome, meaning that the intermediate phase still involves a high degree of uncertainty.

In the current work, we study consumers' strategies of coping with uncertainty in the context of a distressing and anxiety-provoking high-risk service, namely, reproductive medicine. Thereby, we aim to answer the following research question: How do consumers cope with uncertainty in high-risk services?

Following a qualitative approach, we contribute to service literature by providing a typology of coping strategies applied when facing the uncertainty of a service outcome and suggesting a first explanation for individual differences in the coping behavior taking into account the anticipated outcome. Moreover, we add to transformative service research by pointing out opportunities to enhance the well-being of consumers of high-risk services during times of uncertainty. As we have chosen fertility treatment as the research context, we shed light on the challenges of a particularly vulnerable target group that suffers not only from a medical condition but also from uncertainty (Robertson et al. 2021). We, thereby, respond to a prior call for research to focus on transformative services for vulnerable consumers (Ostrom et al. 2015). From a managerial perspective, our findings serve as guidelines for service providers to better support their consumers. Fertility clinics, for instance, lose a considerable amount of patients due to the high psychological distress involved in fertility treatment (Brandes et al. 2009; Gameiro et al. 2012), making support a major challenge. Moreover, we address consumers of high-risk services themselves, providing guidance on how to successfully cope with the uncertainty they face.

The remainder of this article is organized as follows. We begin by reviewing previous research related to coping with uncertainty. Subsequently, we provide detailed insights into our methodological approach. We then outline the relevance of coping strategies for consumers facing uncertainty before reporting our findings. Finally, we conclude with a discussion of theoretical contributions, managerial implications, and future research directions.

2 Conceptual Background

2.1 Uncertainty

Waiting for uncertain outcomes has shown to be distressing and anxiety-provoking (e.g., Boivin and Lancastle 2010; Sweeny et al. 2016; Sweeny and Andrews 2014; Sweeny and

Falkenstein 2015), particularly in situations in which the risk of an undesired outcome is high and consequences are perceived as severe (Sweeny and Cavanaugh 2012). The terms uncertainty and risk are often used synonymously (e.g., Boshoff 2002; Lipshitz and Strauss 1997; Sweeny and Shepperd 2007). However, to be precise, in common understanding, risk is one type of uncertainty, which implies that at least one of the potential outcomes is unfavorable (here, treatment failure). Uncertainty, on the other hand, is more general and can also be experienced with two or more equally good outcomes such as not knowing the baby's gender. However, the latter type of uncertainty is not considered in this study.

In the consumption context, Boshoff (2002) distinguishes between several types of risk that can be transferred to fertility treatment, such as the physical risk (here, e.g., side effects of medication), the financial risk (here, e.g., waste of money, if treatment fails), and the social risk (here, e.g., stigmatization for admitting infertility). However, the type of risk this study focuses on is the functional risk, i.e., the risk that the product or service does not fulfills its purpose (here, treatment failure). Zayer, Otnes, and Fischer (2015)'s definition of high-risk services equally addresses the risk concerning the service outcome.

Usually, when consumers buy products or services, marketers try to reduce this risk by providing guarantees aiming at minimizing negative consequences of failure and/or by providing information to create certainty that a failure will not occur (Boshoff 2002). However, as it is in the nature of high-risk services that they are uncontrollable and frequently fail (Zayer, Otnes, and Fischer 2015), the latter seems impossible in this context, while the former has already been demonstrated to be unprofitable (Schmittlein and Morrison 2003). Therefore, consumers have to accept the risk of failure and cope with the uncertainty during treatment.

2.2 Coping

Coping is originally linked to stress. The most established theory regarding coping is probably the one proposed by Folkman and Lazarus (1980) that distinguishes between problem-focused and emotion-focused coping. While problem-focused coping involves managing the source of stress, emotion-focused coping entails regulating stressful emotions (Folkman and Lazarus 1980). However, a large number of studies in psychological research has examined coping strategies on a more granular level (see e.g., Tamres, Janicki, and Helgeson 2002 for a meta-analysis). COPE, the most frequently used scale for assessing coping strategies (Kato 2015), for instance, differentiates between five strategies of problem-focused coping, five strategies of emotion-focused coping and three additional coping strategies (Carver, Scheier, and Weintraub 1989). Research on coping with infertility specifically (e.g., Berghuis and Stanton 2002; Boivin and Lancastle 2010; Peterson et al. 2008; Stanton 1991; van den Broeck et al. 2010) does not include conceptual or exploratory studies, but only refers to existing coping scales from psychological literature. However, there are typologies of coping strategies which are adapted to the consumption context (Duhachek 2005; Yi and Baumgartner 2004), but they focus exclusively on product or service failures as the stressor, while uncertainty during service consumption has not yet been studied. Research on coping with uncertainty in decision-making, on the other hand, takes into account the special characteristics of uncertainty as a stressor (Cui, Bao, and Chan 2009; Hassan et al. 2013; Lipshitz and Strauss 1997), but not all of the coping strategies are applicable if the decision is already taken and uncertainty remains, such as, for instance, delaying a decision. Literature on waiting time is probably closest to our topic of interest, but research in this field is comparatively limited. An exemption is the uncertainty navigation model which was developed and redefined across several studies (e.g., Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012; Sweeny and Falkenstein 2015).

Coping strategies in the diverse research strands are manifold and differ depending on the respective stressor. Below, we discuss and compare coping strategies that have been observed in different contexts and that may have relevance for consumers facing uncertainty during service consumption and particularly for infertility patients awaiting the treatment outcome.

Action Coping

Action coping refers to the attempt to manage the source of stress (Duhachek 2005). It is the epitome of problem-focused coping (Folkman and Lazarus 1980). On a more granular level, it includes planning and undertaking steps to resolve the problem and can also comprise seeking instrumental support (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002). Managing the source of distress in the context of coping with uncertainty means reducing the uncertainty. As in the context of decision-making, the only way to reduce uncertainty is by seeking further information or—if unavailable—making assumptions (Lipshitz and Strauss 1997). We stress that this reduces only the uncertainty, not the probability of a negative outcome. Nevertheless, action coping was also shown to be applied when facing uncertainty. In this context, it aims at minimizing objective consequences of a potential negative outcome by taking respective preparatory measures (Lipshitz and Strauss 1997; Sweeny 2012; Sweeny et al. 2015; Sweeny et al. 2016; Sweeny and Cavanaugh 2012).

Avoidance

Avoidance is a common coping strategies when facing general stress (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002), in the context of consumption (Duhachek 2005; Yi and Baumgartner 2004) and during waiting times (Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012). Avoidance is also known as mental disengagement (Carver, Scheier, and Weintraub 1989; Yi and Baumgartner 2004) or used synonymously with distraction (Sweeny et al. 2016). However, distraction seems to be only one way to avoid confrontations with the stressor. Isolation, which implies not talking about the stressor and avoiding other people in general, is another facet of avoidance (Tamres, Janicki, and Helgeson 2002). Decision-making is the only context, in which avoidance strategy does not seem to be applied (Lipshitz and Strauss 1997), however, decisions may be postponed if possible (Cui, Bao, and Chan 2009; Hassan et al. 2013).

Positive Reappraisal

Positive reappraisal (or positive reinterpretation/ positive thinking) describes the attempt to find the good in a stressful situation (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Tamres, Janicki, and Helgeson 2002; Yi and Baumgartner 2004) or at least to find a way to regard the stressor as less damaging (Duhachek 2005). Both facets of positive reappraisal are also applied during waiting times. However, they do not directly address uncertainty as the stressor, but are used as a preparation for a potentially negative outcome (Sweeny 2012; Sweeny et al. 2015; Sweeny et al. 2016; Sweeny and Cavanaugh 2012).

Emotional Processing

We sum up several coping strategies which aim at reducing emotional disturbances and enabling undisrupted behavior under the broader construct of emotional processing (Rachman 1980). Seeking emotional support, ruminating and venting (i.e., the release of emotions) are such strategies and quite common when coping with stressful events (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Tamres, Janicki, and Helgeson 2002). While seeking emotional support involves other people, ruminating means handling the problem (emotionally) on one’s own. The latter seems to have similarities with the coping strategies of self-control, defined as keeping feelings to oneself (Duhachek 2005; Yi and Baumgartner 2004). Emotional venting can take place in public or in private and manifests, for instance, in crying, yelling at others, and breaking things (Tamres, Janicki, and Helgeson 2002). Another coping strategy is accepting that things cannot be changed (Carver, Scheier, and Weintraub 1989; Yi and Baumgartner 2004). However, we rather understand this as the consequence of processing negative emotions successfully than as a coping strategy. Although all these strategies are not considered in the uncertainty navigation model (Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012), they may still be evident when consumers face uncertainty and fear a negative service outcome. In the context of decision-making, coping strategies which involve processing of stressful emotions, are disregarded (Lipshitz and Strauss 1997)—probably because the processes investigated are often rather rational than emotional.

Denial

Denying that a stressor exists is another common coping strategy (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Tamres, Janicki, and Helgeson 2002). This strategy also exists when uncertainty is the stressor. In decision-making, for instance, suppressing the uncertainty means acting as if under certainty (Lipshitz and Strauss 1997). There are two ways in which uncertainty can be suppressed while waiting for a service outcome: by being convinced that either a favorable or an unfavorable outcome occurs. When facing waiting times, people tend to manage their expectations in the one or the other way (Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012).

3 Methodology

As this study aims at investigating strategies of coping with uncertainty while waiting for a service outcome, we have chosen a research context in which the risk of failure is inherently high, namely, fertility treatment. The probability of success is only about 30% after just one treatment cycle and rises to 61% if patients undertake three attempts—still involving a high risk of not becoming pregnant (Blumenaur et al. 2018). We refer to fertility treatment as a service lasting from initial consultation to successful pregnancy or definite discontinuation of treatment; it can comprise one or several treatment cycles and lasts several weeks or even years. At least two other studies in the field of service research chose fertility treatment as a suitable representation of a high-risk service (Fischer, Otnes, and Tuncay 2007; Zayer, Otnes, and Fischer 2015).

Between November 2020 and August 2021, we conducted 23 semi-structured in-depth interviews. During a prior study (in summer 2020) conducted in the premises of a German fertility clinic, we asked participants for their consent to contact them again for follow-up studies. Out of the 13 contacted women, eight agreed to be interviewed, and one of them even referred another participant (snowball method). Moreover, we launched a call for participation via the clinic's private Facebook group yielding 14 positive responses. We followed the approach of theoretical sampling collecting, coding and analyzing data in parallel mode until additional data were unlikely to alter our findings (Glaser and Strauss 2017). Finally, our sample comprised women aged between 28 and 46 who had already undergone, were currently undergoing, or were planning to undergo fertility treatment (in vitro fertilization [IVF] or intracytoplasmic sperm injection [ICSI]). Their experience with assisted reproduction ranged from only having had the initial consultation to having undergone four failed attempts to having conceived two children with medical assistance and awaiting the third. A more detailed overview of our informants is provided in Table 4. Any correspondence took place directly between the patient and the researcher, so that confidentiality was ensured—also towards the fertility clinic.

Due to the COVID-19 pandemic, none of the interviews could be held face to face. Instead, we used Zoom for video calls where possible and, in four cases, conducted the interviews via phone, since the informants did not have access to the hardware required for a video call. The interviews lasted 49 minutes on average, and all informants gave their consent to an audio recording, enabling us to transcribe the interviews verbatim. To begin the interview, all patients were asked to share their personal "story" of infertility and their accompanying emotions from the initial wish for a child to the current state of treatment. From then on, all interviews developed differently as the interviewer picked up on particularly interesting aspects of the individual narrative indirectly bringing to light different coping strategies.

The transcription of the interviews resulted in over 450 pages of double-spaced text. We read the transcripts multiple times, coded and recoded them and regularly discussed our impressions, finally arriving at a consensus concerning the six coping strategies identified.

Table 4. Description of Informants

Informant (Pseudonym)	Age	Status of Treatment	Number of Children
Anna	31	Waiting for 3rd ICSI cycle	none
Barbara	33	Waiting for 2nd IVF cycle	none
Christin	32	Waiting for 1st IVF cycle	none
Denise	29	Waiting for 1st ICSI cycle	none
Emilia	40	Pregnant after 5th ICSI cycle	none
Franziska	39	Waiting for 3rd ICSI cycle	none
Gina	35	Waiting for 1st ICSI cycle	none
Henrike	31	Pregnant after 4th ICSI cycle	none
Isabella	30	Pregnant after 2nd ICSI cycle	none
Julia	28	Waiting for 1st IVF cycle	none
Kira	37	Waiting for 7th IVF cycle	none
Laura	36	Waiting for 4th IVF cycle	none
Michelle	30	Thinking about 1st ICSI cycle	none
Nadine	41	In 4th IVF cycle	none
Olivia	33	In 1st IVF cycle (4th overall)	one (born in 2018)
Paula	35	Waiting for 1st ICSI cycle (5th overall)	one (born in 2017)
Ronja	32	Pregnant after 1st ICSI cycle (5th overall)	two (born in 2016 and 2018)
Sina	46	Given up after 7th hormonal treatment cycle	none
Tanja	37	Pregnant after 2nd IVF cycle	none
Uta	36	Waiting for 1st IVF cycle	one (born in 2016)
Vivien	40	Given birth to a child after 3rd hormonal treatment cycle	one (born in 2020)
Wiebke	39	Pregnant after 4th ICSI cycle	none
Xenia	37	In 3rd IVF cycle	none

4 Distress due to Uncertainty

Before discussing the coping strategies identified, we first describe the distress that the uncertainty around fertility treatment causes in order to highlight the relevance of the coping strategies.

During fertility treatment, uncertainty is a major source of distress for patients. Henrike has already undergone four ICSI cycles and describes how she experienced the uncertainty in each phase of a treatment cycle:

> “In fact, from the moment you start with the injections, you are really worried if the eggs form. That was not self-evident for us; we had an average of just four eggs, I guess, which is not that much. […] Until the ultrasound appointment, you are just really worried if something would develop, and afterwards, if it would develop further. After the retrieval, the emotional roller coaster continues, because then you think to yourself, ‘Okay, hopefully they will fertilize,’ and then when you get them [the embryos] transferred, you think, ‘Hopefully it will work out.’ It can really drive you crazy!”

Henrike’s statement shows that the uncertainty itself may shift during different phases, also in intensity, but it is omnipresent. The phases she describes—from starting a treatment cycle until learning the outcome—last about four to five weeks, during which patients are constantly confronted with uncertainty and are under permanent emotional distress. However, the entire fertility treatment, usually comprising several attempts, can easily last multiple years. In all this time, another facet of uncertainty is permanently present: the overarching question of whether one will ever bear a child.

Olivia, who is now a mother of a three-year-old boy, remembers how she felt during the two years of fertility treatment:

> “[I was afraid] that it won’t work out […] and that I will never be a mother. This is what I have repeatedly said to my husband: ‘Do you believe I will ever be a mother?’ That was my biggest fear.”

Considering the duration of fertility treatment and the uncertainty involved, it is no surprise that a considerable number of patients discontinue treatment prematurely, citing emotional distress as a major reason (Brandes et al. 2009; Gameiro et al. 2012).

5 Strategies of Coping with Uncertainty

We found that consumers use two strategies to cope with the uncertainty involved in high-risk services: (1) assessment of subjective probabilities and (2) expectation management. Four more coping strategies are applied if consumers anticipate a negative outcome, namely, (3) preparation, (4) risk reduction, (5) avoidance, and (6) emotional processing. Table 5 shows the ways in which the identified strategies manifest themselves in the collected data, including exemplary quotes for each strategy or subordinate tactic. To illustrate how the six coping strategies and subordinate tactics relate, we developed a model that considers the anticipated outcome as a predictor of use of further coping strategies. Figure 8 is an illustration of the model.

In the following sections, we explain each strategy in detail and evaluate each strategy's effectiveness against the background of the extant literature. Here, we consider both whether a particular strategy reduces distress during times of uncertainty and whether it mitigates negative emotions following the event of an undesired outcome (Sweeny et al. 2016).

Table 5. Overview of Coping Strategies and Supporting Quotes

Coping Strategy and Definition	Subordinate Tactics	Exemplary Quotes
Assessment of subjective probabilities		
Consumers make outcome predictions based on statistical probabilities or other considerations.		"Actually, it was clear to me pretty quickly what should go differently now, the second time, compared to the first time! We are talking about three/four months apart. My body will certainly not have changed so much in this short time, that it will work better now than the first time." (Anna) "I thought I'd get pregnant easily now. Because chances are higher, if one was pregnant before, to get pregnant again. But if it had failed once, it can also have pathological reasons. Then you don't belong to the group of women anymore who can get pregnant, generally. Then all the probabilities no longer apply. I'm a physicist. I calculated all kinds of probabilities and came to the conclusion that it all sucks." (Tanja)
Expectation management		
Consumers reappraise the likelihood of failure and success.	Positive expectation management	"If I found something negative [on the Internet], then I kept searching until I found something positive." (Barbara) "I'm a positive-thinking person. I don't expect the worst to happen. This is why I didn't even think about that it could fail." (Laura)
	Negative expectation management	"I'm generally rather a pessimist than an optimist, because I'm afraid of disappointments, that it could somehow fail, and this is why I rather think negatively." (Denise) "I am a person who rather sees the negative in order not to be disappointed afterwards. I also try to see it realistically, and if people are too positive, I think, 'No, stop!' I don't want to hear 'It will work 100%,' because nobody knows, and if I get too excited, I would be even more disappointed." (Olivia)

Table 5. Overview of Coping Strategies and Supporting Quotes *(continued)*

Coping Strategy and Definition	Subordinate Tactics	Exemplary Quotes
Preparation		
Consumers aim at diminishing negative emotional responses in case a failure occurs.	Planning ahead	“When I had the initial consultation with my husband, I already wanted to know what’s next, if the three IVFs fail, what we are going to do then. […] Actually, I am already ten steps ahead.” (Uta)
		“Of course, we had already sent the application to the health insurance companies for further measures, just to be prepared.” (Vivien)
	Shifting life goals	“We are eleven times uncle and aunt and we always have children and a big family around us. If it`s not meant to be, it’s not meant to be.” (Barbara)
		“We have already thought about what we will do if we remain childless. I had a good life and I have a good life, before and after [trying to conceive]. And we realized that we have enough things to fill our lives with.” (Vivien)
	Avoiding regret	“I just wanted to try it out. Basically, I do not believe in homeopathy at all—and I think that is my problem—but you just clutch at any straw, and this is why I tried it.” (Christin)
		“It’s good for your mind that you do something. If it doesn’t work out at the end, you at least don’t think to yourself, ‘Maybe it would have worked out if I had taken all these measures.’” (Denise)

Table 5. Overview of Coping Strategies and Supporting Quotes *(continued)*

Coping Strategy and Definition	Subordinate Tactics	Exemplary Quotes
Risk reduction		
Consumers aim at reducing the statistical probability of failure.	Externally managed reduction	"In every treatment cycle, I had additional costs for blastocysts, PICSI, the embryo glue, and a special water bath for the eggs, calcium, or whatever." (Emilia)
		"[The human geneticist] has developed a concept for me to regulate the killer cells: iron, vitamins I should take, and infusions before the treatment." (Kira)
	Self-managed reduction	"I also asked in the fertility clinic if there is anything I could do to improve the quality of my eggs, whether it be losing weight, not eating meat anymore, eating more vegetables, very simple things." (Anna)
		"In the meantime, I also went to an alternative practitioner, tried everything, had acupuncture, and took homeopathic stuff, and then there are fertility massages, which I did." (Christin)

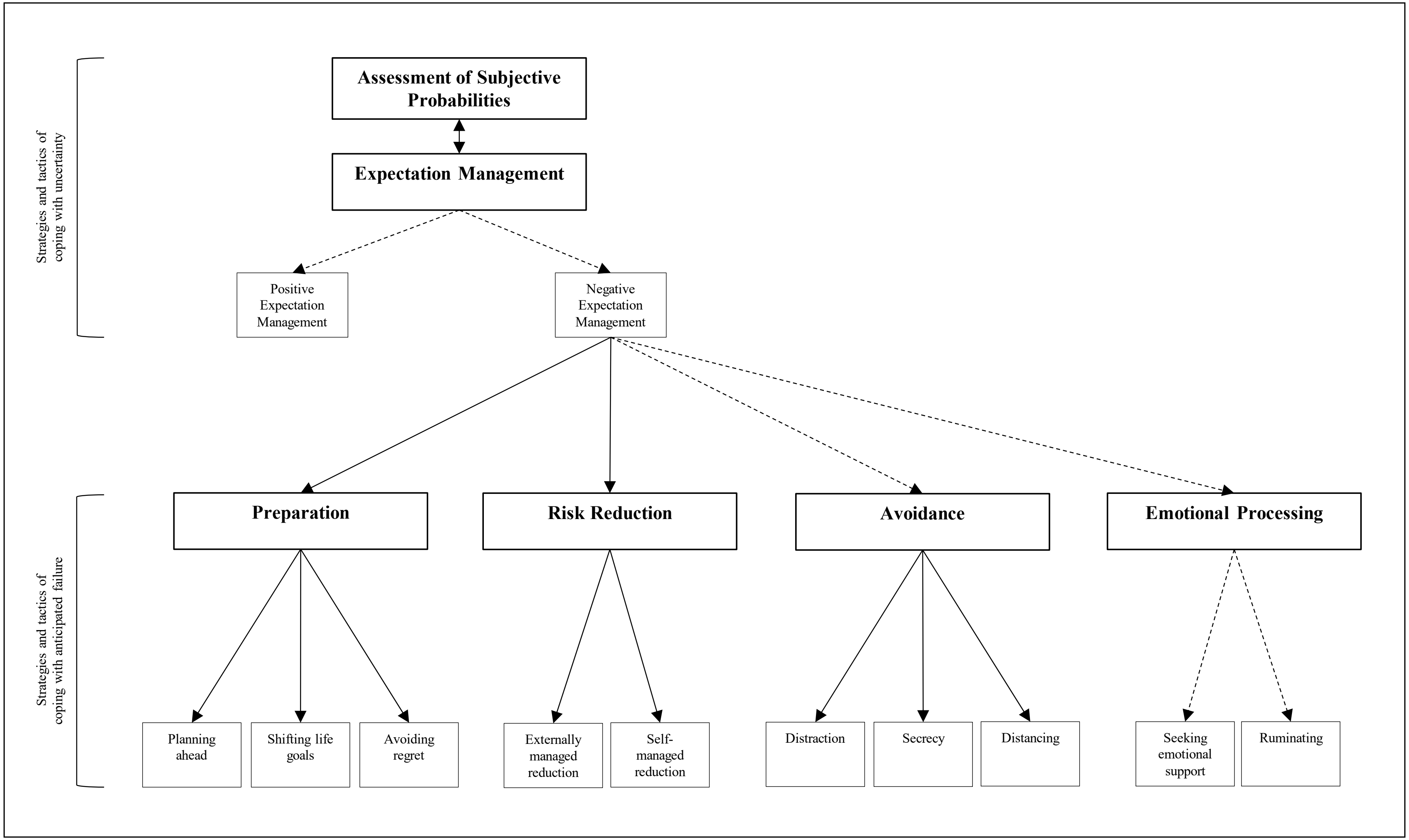
Table 5. Overview of Coping Strategies and Supporting Quotes *(continued)*

Coping Strategy and Definition	Subordinate Tactics	Exemplary Quotes
Avoidance		
Consumers aim at avoiding any negative emotions accompanying the uncertainty.	Distraction	“I arrived, I went out of the airport, I saw the palm trees right at the entrance, and I said, ‘From now on, no more thinking about it.’” (Olivia) “I just distracted myself with it [working]. That is one kind of distraction. Or in the evening, I also met with friends. So, you don’t have that much time to think about it.” (Wiebke)
	Secrecy	“Two of my cousins are pregnant now, and for me, it is something where I think to myself, ‘Okay, fine.’ And I am now a little more—how can I say it—fragile. I don’t want to go there anymore to meet them, unlike before.” (Denise) “I also found it very, very, very hard to have contact even with good friends [who are pregnant].” (Tanja)
	Distancing	“In this cycle, we decided not to tell anyone that I try it again, simply to take this pressure off myself.” (Christin) “I think that you have a kind of pressure of expectation then [if one tells family and friends about fertility treatment]. Then everyone knows and everyone asks, ‘How does it look?’ ‘How are you?’ ‘Did it already work out?’” (Franziska)

Table 5. Overview of Coping Strategies and Supporting Quotes *(continued)*

Coping Strategy and Definition	Subordinate Tactics	Exemplary Quotes
Emotional processing		
Consumers aim at reducing emotional disturbances and enable undisrupted behavior.	Seeking emotional support	“We told our best friends, so that they know what we were going through. And it felt good to have someone to talk to. I think if I would try to make a secret out of it, maybe because I am afraid of the reactions, or because I don’t want my friends to know it, I would feel left alone.” (Isabella) “When I speak out, I feel better. I have that quite quite often with many things. When I’m just ruminating, I get caught up in thoughts which don’t have anything to do with the original situation, but then I have become so engrossed in my thoughts that I make my own movie out of them. But if I speak something out and talk about it and tell it, then it is a closed fact for me. It just is that way. And then I can better deal with the issue. This is why I have always told everything openly and that felt good to say it out loud.” (Olivia)
	Passive processing	“I just wanted to keep this to ourselves. Of course, I would have talked to these people [people who experienced the same] about it, because that’s different, because they know exactly what I am going through, but nevertheless, it was a topic I rather kept to myself.” (Henrike) “I’m the kind of person who processes a lot of things on her own. So, I processed that on my own.” (Wiebke)

Figure 8. Model for the Application of Coping Strategies and Tactics in Dealing with Uncertainty



Note: The dashed lines indicate opposing strategies or tactics.

Assessment of Subjective Probabilities

When applying the strategy of subjective probabilities assessment, consumers do not accept the existing uncertainty and instead make outcome predictions based on statistical probabilities and further considerations.

While there are certain statistics on general probabilities of success in fertility treatment, it is impossible to calculate chances for an individual patient by considering every single influencing factor. For infertility patients, this uncertain aspect is hard to accept. The aversion against not knowing the probabilities of different outcomes, which was salient among our informants, was first introduced by Ellsberg (1961) and demonstrated in a multitude of studies in decision-making literature (see, e.g., Etner, Jeleva, and Tallon 2012 for a review). As a consequence, our informants considered information that went far beyond "real" statistical probabilities when they anticipated their treatment outcome.

Kira, for instance, extensively used social media and shared that she counted successful and unsuccessful experience reports to get a better feeling about the probability of success: "It's like a little statistic, for how many people it works out, which attempt works out. That's something I'm always interested in."

Based on this "statistic", Kira arrived at a first prediction of her outcome and, in the course of treatment, interpreted any occurrences, which either reinforced her assumption or made her think it over. Kira had already undergone six IVF cycles and explained that in each treatment cycle, she had been oversensitive and listened carefully to her body; "a slight tug in the abdomen" or "a slight red coloration on the toilet paper" were hints that made her believe that the treatment had failed. What exactly was considered a hint of success or failure partly differed between the patients. In the case of Michelle, the (perceived) lack of effort of the fertility clinic made her anticipate a negative outcome. Denise, on the other hand, believed in fate and interpreted the delay of her treatment as an omen of failure.

Assessment of subjective probabilities is a coping strategy known in decision-making literature as assumption-based reasoning (Lipshitz and Strauss 1997), and also consistent with waiting time literature, where it is suggested that people make assumptions based on what they know and what seems reasonable to them if the probability is unknown (Sweeny and Shepperd 2007). As a result of the perceived probability, the patients anticipated either a positive or a negative outcome.

Expectation Management

Applying the expectation management strategy, consumers reappraise the likelihood of failure and success (Sweeny and Cavanaugh 2012). In accordance with previous studies on waiting time, we differentiate between two opposing tactics, positive expectation management and negative expectation management (Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012)

Patients who take an optimistic approach tend to suppress the uncertainty, engaging in positive expectation management. Depending on their initial anticipation, they do anything to either maintain or develop a positive mindset and a strong belief in success.

Ronja was already awaiting her third child, but she remembered how she had developed belief in success during the fertility treatment of her first daughter:

> “I once talked to a friend, and she said, ‘You have to believe in it; everything is fine and will be positive in the end.’ And then I really spent the whole treatment telling myself, ‘Okay, this is going to work out. It really sounds crazy, but it’s going to work out, it’s positive and everything is fine.’ And, indeed, it worked out…”

In this particular case, the strong belief in success did not exist right from the beginning but was consciously produced by the patient. Those who follow this approach avoid any negative vibrations that could shake their conviction.

Barbara, for example, believed in the success of her first IVF cycle right from the beginning and was disappointed by the reactions of her family and friends, who were rather reserved and told her not to get her hopes up too high. Thus, she decided to keep the following attempts a secret to avoid being pulled down by their—in her opinion—negative mindset. Similarly, Franziska avoided being pulled down by negative experience reports. She was very active on social media, in online forums, and on Facebook groups, but she "moved to reading only the positive things to give [herself] a better feeling." In other words, she filtered any information she found and took in only what strengthened her belief in success, thus suppressing the uncertainty. This selective perception is also known as the Pollyanna principle in psychology (Matlin and Stang 1978), named after a children's book whose protagonist is known for her optimism and her ability to ignore negativity.

Suppression of uncertainty is a coping strategy known from decision-making (Lipshitz and Strauss 1997), however, there seem to be less extreme forms of positive expectation management such as the positive self-talk applied by Ronja, which is also used when a negative event already occured (Tamres, Janicki, and Helgeson 2002).

Prior research has shown that optimism—which is inherently involved in positive expectation management—can help patients through times of uncertainty, making it a less distressing or even a joyful experience (Carroll, Sweeny, and Shepperd 2006; Lee and Qiu 2009; Wilson et al. 2005). Among our informants, the patients who applied this strategy of suppression also experienced less distress than others. For instance, Barbara felt less emotional pain compared to the other informants when confronted with families with children; rather, she enjoyed it: "I like to watch YouTube videos, mommy blogs, or something like that; everything that has to do with babies and children, and Urbia, this website about wishing for a child, I really like to read that.” The low degree of distress involved in this approach makes further coping strategies unnecessary, but a potential disadvantage of this generally favorable strategy is that it may evoke stronger disappointment in case a failure occurs unexpectedly (Sweeny et al. 2016). However, it is important to stress that only a few patients applied the tactic of positive expectation management, and none of them did so consistently.

Patients who prefer a pessimistic approach apply the strategy of negative expectation management, also known as bracing (e.g., Carroll, Sweeny, and Shepperd 2006; Sweeny & Shepperd, 2007), which is aimed at avoiding disappointment in the event of failure. One of our informants, Julia, described this tactic as follows:

> “I try to say to myself, ‘Okay, it’s realistic that you need two or three attempts. It’s not likely that it will actually work out the first time.’ So sometimes I want to hold back a bit, not to think, ‘Yes, of course, the first attempt will definitely work out.’”

Julia seemed to be an optimistic person in general, but drawing on statistics, she consciously tried to hold back hope. She assumed that disappointment with a potentially negative outcome would be lower if she already anticipated failure than if she hoped for success. Decision affect theory, which suggests that the emotional impact is greater if the outcome is unexpected, supports her assumption (Mellers et al. 1997). Consequently, patients can proactively reduce negative consequences of a potential failure by lowering their expectations (Sweeny and Shepperd 2007). However, while negative expectation management seems to be an effective tactic in retrospect, when a failure does indeed occur, it may lead to higher distress during times of uncertainty, as it—contrary to positive expectation management—involves a negative mindset (Sweeny et al. 2016), explaining the need for further coping strategies.

The perceived probability (as a result of the anticipation strategy) influences whether consumers chose positive or negative expectation management, but the general preference for one of the two tactics may also affect how they interpret hints when anticipating an outcome. Finally, it is an interplay of both that determines whether consumers anticipate success or failure, and we assume that it is not fully controllable by the consumer. However, the anticipated outcome determines the use of further coping strategies. Consumers who anticipate a failure tend to apply further coping strategies (discussed below), while those who anticipate a positive outcome do not seem to have this need, as they suppress the uncertainty and do not experience the related distress.

Preparation

Preparation is one of the strategies consumers with negative expectations engage in. It aims at diminishing negative emotional responses in case of failure and resembles the strategy of forestalling (known from decision-making literature; Lipshitz and Strauss 1997) as well as psychological consequence mitigation (known from waiting time literature; Sweeny and Cavanaugh 2012). Three different tactics are part of the preparation strategy: (1) planning ahead, (2) shifting life goals, and (3) taking measures to avoid regret.

Planning ahead means that patients already plan their next steps after failure while the outcome is still uncertain. Although this tactic resembles action coping on the first sight, it is not equal here, as the plans made do not address the current stressor (i.e., uncertainty), but potential future stressors (i.e., failure).

Denise, for instance, had not even started the first treatment cycle but had already prepared for the event of failure. When she read about a specialist for genetics on social media, she immediately recognized that as a future opportunity.

> "There is—I don't know what kind of specialist he is exactly—kind of a physician for genetics; I think his name is Dr. Meier [pseudonym] and he is very well known in Germany. I didn't know him before, but I will keep that in mind for potential problems I may have later. In this case, I already have someone to turn to."

Having an alternative plan helped Denise regard the potential negative outcome as a temporary setback instead of as a final failure, as it created some kind of treatability. As treatability of a potential negative outcome is suggested to be a moderator of anxiety and distress (Sweeny and Cavanaugh 2012), it seems reasonable to assume that this tactic is effective not only in mitigating consequences of failure but also in enhancing well-being during times of uncertainty.

Patients anticipating recurring failures apply another tactic of emotional preparation, which is, however, less common: shifting life goals. This tactic resembles strategies known waiting time literature, which involve assigning less importance to the desired outcome and, thereby, reducing the fear of the undesired outcome. Laura had undergone three failed IVF cycles and had decided to give it one last try. As she would stop the treatment in case of a further failure, she had already begun shifting her goals:

> "We have seven godchildren of all age groups. It's not a substitute, but it's something we can live with relatively well. We always said, 'Okay, we'll just have a different lifestyle then; we'll travel a lot and find other ways to enjoy life.'"

Although Laura's treatment had not yet failed, she had emotionally prepared for that event and imagined an alternative life; while the desire to have children had been her top priority until then, traveling, was to take on a high status in her life in the future.

While strategies that aim at finding benefits in an undesirable situation are known from different research strands (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Sweeny et al. 2016; Tamres, Janicki, and Helgeson 2002), we observe a lighter form of this strategy among our informants. While none of them was able to find advantages in a treatment failure, some could at least find ways to assign less importance to the outcome. Sweeny et al. (2016) were so far the only ones to differentiate between reconsidering the desirability of an outcome and reconsidering the severity of an undesired outcome.

Prior research has demonstrated the positive effect of abandoning an unattainable goal in favor of a new goal on well-being (Wrosch et al. 2003); thus, in terms of preparation, it seems wise to consider alternative goals while the attainability of the current goal is uncertain. This way, the fear of failure can be reduced.

Another tactic described by Carroll, Sweeny, and Shepperd (2006) is bracing to avoid regret. This tactic was also quite present among our informants, evident in the fact that they took costly additional measures they did not even really believe in. Denise, for instance, took several nutritional supplements, although her physician had advised her against it and told her that she was just falling prey to the moneymaking tactics of vendors. She herself questioned the effectiveness of the supplements, but nevertheless, she bought them to avoid regret in case of failure. She shared: “It’s good for your mind that you do something. If it doesn’t work out in the end, you at least don’t think to yourself, ‘Maybe it would have worked out if I had taken all these measures.’”

This tactic of taking additional measures, which is first and foremost part of the risk reduction strategy (discussed in detail in the following section), comprises a rational, as well as an emotional component. However, its effectiveness in terms of preparation is questionable. While it may indeed help avoid regret in case of failure, it does not help patients through times of uncertainty. Fear is not effectively reduced, as the measures taken are not really believed to enhance the chances of success, and of course, one needs to consider the financial impact of taking additional measures not covered by health insurances.

Risk Reduction

The strategy of risk reduction aims at reducing the probability of failure, or in other words, at increasing the chances of success. For this purpose, patients take additional measures—additional medical services, as well as measures in their daily life. Since the term reduction strategy is also used in the context of decision-making (Lipshitz and Strauss 1997), we need to distinguish it from our definition. In decision-making, the strategy aims at reducing uncertainty through acquiring knowledge (Lipshitz and Strauss 1997), whereas we consider it as a strategy to influence an uncertain outcome in the desired way.

Some patients, such as Emilia, tend to rely on additional medical services. Emilia reported that during her five ICSI cycles, she bought all the services the fertility clinic offered, even though she knew that the chances of success would rise only marginally:

> "I mean, you always have all these additional services you can buy. You buy them, but in the end, you never know; percentage-wise it can help, but it doesn't have to. […] In every treatment cycle, I had additional costs for blastocysts, PICSI, the embryo glue and a special water bath for the eggs, calcium or whatever."

Her fear of a potential negative outcome was so strong that she would pay any price to reduce the uncertainty just a little.

In contrast, Michelle did not rely on the medical experts, rather doing her own research to find measures that could support her body in becoming pregnant. To the question of which measures she took, she replied:

> "I looked at my blood values and realized that I have a vitamin D deficiency. […] This is what I take and magnesium against the cramps, and of course, you take folate anyway, and occasionally I fill up my iron reservoirs. Things like that. Then there are these teas I tried—lady's mantle tea in the second half of the cycle and raspberry leaf tea. And then there is always this claim on the Internet that pomegranate juice is great."

As her statement emphasizes, Michelle was well-informed concerning nutritional supplements supposedly supporting conception. As she believed she could maximize chances of success this way, she took matters into her own hands.

Risk reduction is the only strategy that can be considered as action coping or a problem-focused coping strategy as it is known from situations in which a negative event already occurred (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Folkman and Lazarus 1980; Tamres, Janicki, and Helgeson 2002; Yi and Baumgartner 2004). In contrast to all other strategies applied by our informants, risk reduction does not address the emotional adjustment (although this strategy might also have positive side effects in this regard), but aims at directly managing the stressor.

Avoidance

Applying the avoidance strategy, consumers aim at avoiding any negative emotions accompanying the uncertainty. Those may be emotional distress, pressure from the social environment, or envy.

The most common tactic of the avoidance strategy is distraction. Engaging in activities can help patients shift their focus elsewhere for a certain period of time, and even to briefly experience flow and pleasure in other aspects of life. For Michelle, who had already undergone two inseminations and therefore knew the process, the two weeks between the insemination and the pregnancy test were the most distressing; she explained, “I’m actually quite glad when I have to work a lot, because then I can’t think too much about it.”

Although working is relatively energy-consuming, it gives a sense of productivity and distracts from ruminations. We know this strategy also from general coping literature and waiting time literature (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Sweeny et al. 2016; Tamres, Janicki, and Helgeson 2002; Yi and Baumgartner 2004), where avoidance and distraction are frequently used synonymously. A considerable amount of research has shown that this tactic is quite effective in terms of reducing distress (e.g., Lyubomirsky and Nolen-Hoeksema 1995; Morrow and Nolen-Hoeksema 1990). However, in the long term, it prevents patients from successfully processing their emotions (Rachman 1980), an opposing strategy that is discussed in the following section.

A second tactic that is salient among our informants is called “secrecy.” Feeling pressure from their social environment is particularly stressful for patients, and therefore they tend to keep their fertility treatment a secret. Henrike was one of the informants who did not talk about her treatment to most of her family and friends. She explained her motives for doing so: “I didn’t open up about it because I’m ashamed or anything but because I didn’t want so many people to wait with us for it to work out. […] Anyone who asked about it just hit a deep wound.” Even if unintentional, asking about the progress of the treatment can hurt the patient and builds up a certain pressure. Therefore, some patients keep their treatment a secret as long as the outcome is uncertain, to avoid being confronted by their social environment.

Indirect confrontations can still take place if other persons have already achieved the desired goal, evoking envy. For women trying to conceive, meeting pregnant women or families with children can be a distressing situation. To avoid these confrontations, patients tend to distance themselves from such people; even, or especially from those closest to them. To avoid ambiguities here, we stress that distancing within the uncertainty navigation model has a different meaning as it describes the mental distancing from the desired outcome (Sweeny et al. 2016), rather comparable to the tactic of shifting life goals.

When Anna started fertility treatment and her best friend became pregnant at the same time, it was very hard for her; she shared:

> "I asked her to give me time. I needed distance, and she could accept this for a certain time, but at some point, of course, she was no longer satisfied with the fact that we could no longer see each other, that we could no longer meet, and that she couldn't tell me anything. She told me, 'I was at the ultrasound and, oh, I saw the little heart,' and for me it was so hard, and I told her I didn't want to hear anything about that. Today, my best friend and I are no longer best friends."

To avoid being confronted with her pregnancy, Anna distanced herself so far from her best friend that it ultimately resulted in the end of their friendship. Although only investigated in other contexts so far—for example, regret of buying decisions (Poynor 2010) or romantic jealousy (Guerrero et al. 1995)—this tactic is common in coping with envy. It is moreover used in dealing with other stressors such as health-related issues (Tamres, Janicki, and Helgeson 2002).

Both distraction and secrecy have considerable side effects, as they involve excluding and distancing oneself from loved ones, who are usually the most important source of support in times of distress.

Emotional Processing

The strategy of emotional processing leans on a concept that defines it as a way to reduce emotional disturbances and enable undisrupted behavior (Rachman 1980). The most important tactic patients apply to reach this goal is to seeking emotional support. Henrike, for example, talked to a friend about her fertility treatment and received a lot of emotional support in return:

> "I told her that we have an appointment at the fertility clinic, and afterwards, I told her what happened there. She accompanied us on our whole journey and supported us, gave us hope and a positive mindset. She really was a huge source of support."

While Henrike disclosed her fertility treatment to a close friend, other informants preferred exchanging experiences only with other patients, who they felt might better understand their situation and emotions. According to Denise, "someone who is not affected can never understand what [infertility patients] are going through," which is why she only used social media to talk about her feelings and to seek emotional support from like-minded people. Seeking emotional support from others is a well-established coping strategy when facing distress in whatever way (Carver, Scheier, and Weintraub 1989; Duhachek 2005; Tamres, Janicki, and Helgeson 2002; Yi and Baumgartner 2004).

On the other hand, some patients prefer processing their negative emotions on their own. Instead of talking about their experiences, they engage in excessive ruminations. We suppose that particularly patients who experience feelings of guilt or shame around their infertility tend to follow this approach, since they fear being judged by others.

Christin, for instance, struggled with her weight, which she assumed was the cause of her infertility. She keeps her emotions to herself, but ruminates a lot and focuses intensively on the issue, for instance, by passively following other patients on social media. People sharing their stories on social media helped her overcome her negative emotions:

> “I see that I’m not alone, not alone with this problem, which is hushed up in society. I see, for example, a young woman, even four years younger than I am, she has a top figure, a healthy lifestyle and still, it doesn’t work out for no apparent reason.”

The fact that others, who are thinner and live healthier than her, are nevertheless not able to become pregnant helped her processing her negative emotions. The tactic of ruminating and focusing intensively on a stressor is not new, but also applied in other stressful situations (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002; Yi and Baumgartner 2004). Nevertheless, it has been shown that disclosure of distressing situations significantly reduces distress (see e.g., Frattaroli 2006 for a meta-analysis), which is why ruminating is a less favorable tactic compared to seeking emotional support.

6 General Discussion

Many services are characterized by high uncertainty regarding whether or not a desired outcome will be achieved. Through the current research, we identified six strategies and twelve subordinate tactics consumers use when availing such high-risk services. Moreover, we explain the differences in the use of the coping strategies, taking the expected outcome into account. In the following sections, we discuss the contribution of our research to theory, offer recommendations for both service consumers and service providers, and highlight future research opportunities.

6.1 Theoretical Contributions

With the current research, we contribute to the literature in two important ways. First, we add to service research by providing a typology of coping strategies applied during the consumption of a high-risk service. While consumers’ uncertainty in decision-making (e.g., Bordley 2001; Boshoff 2002; Lipshitz and Strauss 1997; Sun, Keh, and Lee 2012), as well as their coping with service failures (e.g., Gabbott, Tsarenko, and Mok 2011; Gelbrich 2010; Strizhakova, Tsarenko, and Ruth 2012), has been studied extensively, the time wherein a service is consumed but its outcome is still unknown has been largely neglected in prior studies. Taking into account prior research from the related research strands, the typology ended up being a mixture of coping strategies known from general, consumption-related, and waiting time-related coping literature as well as from decision-making literature. Table 6 provides an overview of the identified coping strategies and compares them with strategies known from prior research. Although the uncertainty navigation model (Sweeny et al. 2016; Sweeny and Cavanaugh 2012), for instance, seems closely related to the phase of uncertainty while awaiting a service outcome, we were able to present quite a few further coping strategies and subordinate tactics which have been disregarded so far. Moreover, we undertook a first attempt, to explain individual differences in consumers' coping behavior by considering the anticipated outcome as an influencing factor.

Second, we contribute to transformative service research aiming at "creating uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem" (Anderson, Ostrom, and Bitner 2011, p.3). Responding to a call for research by Ostrom et al. (2015), we focus on the well-being of vulnerable consumers suffering not only from a medical condition but also from uncertainty during their treatment (Robertson et al. 2021). Our findings help them to cope more effectively with the discomfort of uncertainty and the fear of failure and guide the service provider to support them in doing so. We hope, that this does not only enhance well-being while waiting for the outcome, but also prevents patients from giving up treatment prematurely due to the high emotional distress involved.

Table 6. Typology of Coping Strategies in a Theoretical Comparison

Coping Strategy/ Tactic	General Coping Literature	Consumption-related coping literature	Infertility-related coping literature	Waiting time literature	Decision-making literature
Assessment of subjective probabilities	-	-	-	-	Reduction (Lipshitz and Strauss 1997) Assumption-based reasoning (Lipshitz and Strauss 1997)
Expectation management	-	-	-		Suppression (Lipshitz and Strauss 1997)
Positive	Positive self-talk (Tamres, Janicki, and Helgeson 2002)	-	-	-	-
Negative	-	-	-	Bracing (Carroll, Sweeny, and Shepperd 2006)	-

Table 6. Typology of Coping Strategies in a Theoretical Comparison *(continued)*

Coping Strategy/ Tactic	General Coping Literature	Consumption-related coping literature	Infertility-related coping literature	Waiting time literature	Decision-making literature
Preparation	-	-	-	Psychological consequence mitigation (Sweeny and Cavanaugh 2012) Proactive coping (Sweeny et al. 2016)	Forestalling (Lipshitz and Strauss 1997)
Planning ahead	-	-	-	Plan ahead (Sweeny 2012)	-
Shifting life goals	Positive reinterpretation/ positive reappraisal (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002)	Positive reinterpretation (Yi and Baumgartner 2004) Positive thinking (Duhachek 2005)	-	Benefit-finding/ looking for the silver lining in all outcomes (Sweeny 2012; Sweeny et al. 2016; Sweeny and Cavanaugh 2012) Distancing (Sweeny et al. 2016)	-
Avoiding regret	-	-	-	Bracing to avoid regret (Carroll, Sweeny, and Shepperd 2006)	-
Risk reduction	Active coping (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002)	Action coping/ planful problem solving (Duhachek 2005; Yi and Baumgartner 2004)	-	-	-

Table 6. Typology of Coping Strategies in a Theoretical Comparison *(continued)*

Coping Strategy/ Tactic	General Coping Literature	Consumption-related coping literature	Infertility-related coping literature	Waiting time literature	Decision-making literature
Avoidance	Avoidance (Tamres, Janicki, and Helgeson 2002)	Mental disengagement (Yi and Baumgartner 2004)	-	Emotion regulation/ suppression (Sweeny et al. 2016; Sweeny and Cavanaugh 2012)	-
Distraction	Mental disengagement (Carver, Scheier, and Weintraub 1989)	Avoidance (Duhachek 2005)	-	Distraction (Sweeny 2012; Sweeny et al. 2016)	-
Secrecy	-	-	-	-	-
Distancing	Isolation (Tamres, Janicki, and Helgeson 2002)	-	-	-	-

Table 6. Typology of Coping Strategies in a Theoretical Comparison *(continued)*

Coping Strategy/ Tactic	**General Coping Literature**	**Consumption-related coping literature**	**Infertility-related coping literature**	**Waiting time literature**	**Decision-making literature**
Emotional processing	Emotional Processing (Rachman 1980)	-	-	-	-
Emotional support-seeking	Seek emotional social support (Carver, Scheier, and Weintraub 1989; Tamres, Janicki, and Helgeson 2002)	Emotional support (Duhachek 2005) Seeking social support (Yi and Baumgartner 2004)	-	-	-
Ruminating	Rumination (Tamres, Janicki, and Helgeson 2002) Focus on and venting of emotions (Carver, Scheier, and Weintraub 1989)	Self-control (Yi and Baumgartner 2004)	-	-	-

Notes: There is a terminological fuzziness between different research strands. Coping strategies from prior research are grouped together if defined similarly, although named differently; strategies are listed separately if there are substantial differences in the definitions, even if named the same. Moreover, coping strategies from prior research show different levels of granularity. Strategies from prior research whose definitions comprise all subordinate tactics are listed on the level of the superordinate strategy; strategies from prior research which comprise, but go beyond our definition of a strategy/tactic are also listed.

6.2 Implications for Consumers and Service Providers

Although most of the strategies used while facing uncertainty around a service outcome seem to work, some of them have more negative side effects than others. Table 7 presents an overview of all coping strategies including recommendations for consumers on how to cope effectively with the uncertainty and for service providers on how to support their customers in this regard.

Concerning the strategy of subjective probabilities assessment, it seems important that consumers have access to reliable sources of information to assess their chances of success realistically. This supports recommendations from prior research (Zayer, Otnes, and Fischer 2015). It is the task of the service providers to provide this access, as consumers will otherwise rely on random information they find. Consumers, on the other hand, need to be aware of the fact that information on the Internet, particularly that in experience reports on social media, is often biased.

We hesitate to offer a recommendation regarding which tactic of expectation management to choose, because we assume that it is something a consumer cannot consciously control, and both tactics have advantages and disadvantages. While positive expectation management may lead to less distress during the period of uncertainty, negative expectation management may make failure easier to handle. However, it is important that the service provider senses and respects the tactic chosen by the consumer. Those following a positive approach do not want to hear about potential failures; rather, they seek reassurance that strengthens their belief in success. On the other hand, consumers with a rather negative mindset feel deceived if the service provider seems too optimistic.

Table 7. Implications of the Coping Strategies

Coping Strategy	Stressor	Implications for Consumers	Implications for Service Providers
Assessment of subjective probabilities	Uncertainty	When seeking information to anticipate their own outcome, consumers need to be aware of potentially wrong or biased information on the Internet, especially on social media.	As most consumers seek information to base their anticipation on, service providers should recommend reliable sources and raise awareness regarding potentially wrong or biased information on the Internet.
Expectation management	Uncertainty	There is no clearly favorable tactic; both positive and negative expectation management have advantages and disadvantages. Moreover, approaches are probably selected subconsciously.	Service providers should assess which tactic of expectation management a consumer applies and adapt the consultation respectively (e.g., by following the recommendations provided below for consumers using negative expectation management and strengthening the belief in success for consumers using positive expectation management).
Preparation	Anticipated failure	The preparation strategy can be recommended for consumers anticipating a negative outcome, as it is expected to reduce negative emotional consequences and thus also the fear of failure.	Service providers could, for instance, outline alternatives and provide a plan of potential next steps in case a failure occurs, thus reducing the consumer's fear of failure.
Risk reduction	Anticipated failure	Consumers should be aware that they are at risk of exploitation by their respective service providers or providers of supplementary products and, therefore, seek consultation and carefully weigh costs and benefits.	Service providers need to guarantee transparency concerning the cost–benefit ratio of the additional services they provide and inform consumers about external supplementary products, explaining why they are (not) recommendable for a particular consumer.
Avoidance	Anticipated failure	Consumers should avoid tactics that involve excluding and distancing from loved ones, who can be an important source of emotional support. They are recommended to rather communicate their emotions and needs openly.	Service providers should encourage consumers to process their emotions instead of avoiding them, perhaps through offering professional support.
Emotional processing	Anticipated failure	Emotional processing, particularly by seeking emotional support, is highly recommended, since disclosure of distressing situations reduces distress.	Service providers should encourage consumers to process their emotions through enabling exchange of experiences among consumers (e.g., by providing online platforms).

Those who anticipate failure generally benefit from preparation measures, and we encourage them to apply this strategy. Planning ahead and focusing on different life goals makes a failure more bearable and, at the same time, reduces the fear of failure. Service providers can support their consumers, particularly in planning ahead, through providing them with information about potential next steps even before a service failure occurs, which, again, aligns with recommendations from prior research (Zayer, Otnes, and Fischer 2015).

On the other hand, taking measures to avoid regret is one of the tactics that has substantial side effects, along with the risk reduction strategy. Nearly every consumer takes additional measures and pays extra for them, even when the efficiency of these measures is low or their efficacy is generally questionable. Therefore, consumers have to be aware of the risk of exploitation by providers. We strongly recommend seeking professional advice before buying any additional products (e.g., nutritional supplements). In this regard, service providers need to be completely transparent about the cost–benefit ratios of their own services and act as professional consultants concerning any other products and services on the market.

Similarly carrying the risk of side effects are tactics of avoidance, which include distancing oneself from loved ones. It is the first impulse of many consumers to avoid any confrontations in their daily life regarding the issue of concern. This is plausible, since negative emotions (e.g., fear, jealousy, pressure) can be avoided. However, while this tactic may help suppress these emotions in the short term, long-term side effects can be tremendous.

We recommend consumers to find ways to speak openly about the issue and their needs. We anticipate that such action will in most cases lead to support from loved ones and help to process negative emotions successfully. Service providers should encourage their consumers to choose this approach of disclosure, while simultaneously offering opportunities to talk about their experiences and process emotions to those who are reticent toward their social environment (e.g., psychological support or online platforms). Additionally, as several informants reported that people behave insensitively without intending to do so, service providers could offer guidelines for family and friends, providing them with a better understanding of the consumer’s situation and feelings.

6.3 Limitations and Future Research Directions

The current work is not without limitations that offer several worthwhile opportunities for future research. First, individuals apply coping strategies as a reaction to distressing situations, which is why our findings will not have relevance for low-emotion services. Moreover, a certain period of uncertainty is necessary for coping strategies to emerge. Therefore, our findings are limited to services with temporal divergence between the first service encounter and the final outcome. Despite the restrictions, we have identified several high-risk services for which our findings may apply, such as various health-related services, those offered by dating and employment platforms, legal counseling, and weight loss programs. However, the extent to which our findings are generalizable to these services needs to be further investigated, also against the background that they are not limited to female consumers. Focusing on the coping strategies of male consumers seems particularly interesting, as several informants in the current study reported opposing coping strategies of their partners which often resulted in conflicts and prior research has already identified gender-specific differences in coping in other contexts (see e.g., Tamres, Janicki, and Helgeson 2002 for an overview).

Second, we were not able to explain individual differences in the use of coping strategies (except for the two opposing tactics of expectation management). For instance, it remains unclear which factors (e.g., personality traits or past experiences) determine whether a consumer chooses the strategy of avoidance or that of emotional processing. Future research should aim at finding potential explanations for the same, for instance, comparable to the study undertaken by Sweeny and Andrews (2014) in the context of waiting time.

Third, from a practical perspective, it would be interesting to learn about the effectiveness of different strategies. Our recommendations so far are based on only the literature and the personal assessments of our informants. A longitudinal study that captures the use of coping strategies and the level of distress at different points of time in fertility treatment could help gain deeper insights into this aspect and thus enable providers to better support patients in different treatment stages. Adding to the study by Lancastle and Boivin (2008), future research could test interventions derived from our typology of coping strategies and aiming at supporting patients in coping with uncertainty while waiting for a service outcome.

D Empirical Research Paper 3: #infertility – Dealing with Taboo Topics on Social Media

Abstract

In the past, when taboo topics—such as sexuality or certain medical conditions—were discussed online, this usually took place in secluded online forums with only like-minded people. However, this began to change in recent years, when taboo topics entered also public social media platforms like YouTube, Twitter and Instagram. This study explores the potential of this development in enhancing the well-being of consumers confronted with taboos and suffering from stigmatization. Two ways were identified in which infertility patients benefit from a public discussion of the topic on social media: (1) Through watching videos and engaging in discussions, patients satisfy their infertility-related needs (i.e., need for information, emotional support, and experience sharing); and (2) Through addressing people not affected by infertility, bloggers help de-taboo the issue and sensitize and educate society. To providers of stigmatized services, the research emphasizes the benefits of incorporating social media in the consumer support strategy and simultaneously offers advice to consumers and bloggers on how to use social media responsibly.

Additional Note:

- An abbreviated version of this paper co-authored by Sören Köcher (Otto-von-Guericke University Magdeburg) and Sarah Köcher (TU Dortmund University) is currently under review for publication (2nd round) in the *Journal of Services Marketing* (JSM), VHB Ranking: C.
- Parts of this paper were presented at
    - Frontiers in Service Conference 2021; online; July 2021
    - 2021 AMA Summer Academic Conference; online; August 2021
    - 12th AMA SERVSIG Conference; Glasgow, UK; June 2022

1 Introduction

From sexual harassment and sexually transmitted diseases to infertility, topics related to sexuality are still taboo in modern societies, and the affected people often suffer from stigmatization. While such taboo topics used to be discussed behind closed doors and were banished to secluded online forums (Veer and Golf-Papez 2018), this situation has begun to change in recent years. For instance, regarding the recent scandal concerning sexual harassment, the American actress Alyssa Milano started spreading the hashtag #MeToo on Twitter, encouraging women around the world to share their experiences with sexual harassment. Observing public social media platforms such as YouTube, Instagram, and Twitter, one can easily find many similar examples of taboo topics being discussed publicly. In the current research, we aim to explore the extent to which people confronted with taboos can benefit from this development. For this purpose, we pose the following research question: How can public social media platforms contribute to the well-being of consumers confronted with taboo topics and suffering from stigmatization? Fertility treatment is an example of such a taboo topic (ESHRE 2017), and its high societal relevance and strong presence on social media make it a suitable topic for our research.

Researchers have already begun to examine the role of online forums in dealing with taboo topics (Veer and Golf-Papez 2018), and even specifically in dealing with infertility (e.g., Hinton, Kurinczuk, and Ziebland 2010; Lee 2017; Malik and Coulson 2010; Wingert et al. 2005). However, this research is limited to rather private social media platforms where only like-minded people meet; public social media platforms such as YouTube, Instagram, TikTok, and Twitter have been neglected so far. Although the tabooing of products and services and the stigmatization involved represent a substantial threat to consumers' well-being, taboos in general have received only limited attention in marketing and consumer research (Larsen and Patterson 2018). Defined as one of the top service research priorities (Ostrom et al. 2015), our study focuses on a particularly vulnerable target group, namely, consumers confronted with taboo topics and suffering from stigmatization. We add to transformative service research by investigating how these consumers benefit from watching videos and engaging in discussions about the taboo topic of infertility on the public social media platform YouTube.

From a managerial perspective, our findings have important implications for consumers confronted with taboos, for providers of tabooed services, such as fertility clinics, and even for social media bloggers. Specifically, we derive recommendations for consumers and bloggers on how to use social media responsibly, and we point out opportunities for service providers to incorporate public social media platforms in their consumer support strategy.

This article is structured as follows. We begin by reviewing the extant literature on taboo topics in general, and that on the role of social media in this context. For our research methodology, we chose a netnographic approach (Kozinets 2002, 2011), which we explain subsequently. Before reporting our findings regarding how consumers confronted with taboos can benefit from the use of public social media platforms, based on our data, we outline the emotional distress experienced by infertility patients due both to the treatment itself and to the perception of infertility as a taboo topic. We conclude with a discussion of the benefits and potential risks of social media use in the context of taboo topics and outline our theoretical contribution, managerial implications, and future research directions.

2 Conceptual Background

2.1 Taboos in Consumer Research

From an anthropological, sociological, and psychoanalytical perspective, five characteristics define a taboo in a narrow sense: It is (1) culturally produced, (2) includes behavioral and/or conversational prohibitions, (3) can be religious or profane in nature, (4) is contagious, and (5) is ambivalent (Sabri, Manceau, and Pras 2010). However, in the fields of marketing and consumption, a taboo is usually understood in a broader sense. Accordingly, we adhere to the definition of taboo by Sabri, Manceau, and Pras (2010) as “a social prohibition, insofar as something that is indecent, shocking, scandalous and unacceptable is contrary to social conventions” (p. 64)—a definition neglecting some of the original facets.

Regarding infertility, however, we consider highlighting the original distinction between behavioral and conversational taboos important. Although undergoing fertility treatment may represent a behavioral taboo in some cultures and religions, this may not be the case in most Western societies. However, many infertile couples still feel the need to conceal their fertility treatment (Martins et al. 2013; Schmidt et al. 2005; Slade et al. 2007), making it a conversational taboo. In this regard, Wilson and West (1981) introduce the concept of unmentionables in marketing, referring to “products or services that are by all standards acceptable to society but that the buyer is reluctant to acknowledge or discuss” (p. 92).

Moreover, taboos are closely related to stigma, as consumption of products or services that are considered taboo often leads to stigmatization of the consumer (Larsen et al. 2018); for example, stigmas are attached to patients undergoing psychological therapy (Sibicky and Dovidio 1986) or women having abortions (Cockrill and Nack 2013).

In most of the relevant literatures, taboos are viewed from the marketer’s perspective; for instance, advertisements of tabooed products and services (e.g., Sabri 2012; Wrobel 2002), anti-stigma campaigns (Meyer et al. 2020), and communication targeted at potentially stigmatized consumers (Harmeling et al. 2021) are discussed. However, a few researchers have also adopted a broader and dynamic perspective, investigating how former taboos get de-tabooed or how stigmatized practices become normal (e.g., Gollnhofer 2015; Sandikci and Ger 2010; Yalkin and Veer 2018). In an effort to conceptualize taboos, Michelson and Miller (2019) emphasize the dynamism, suggesting that taboos are maintained as long as society acts accordingly, but taboo transgressions can alter moral boundaries. Supporting this idea, Yalkin and Veer (2018) reveal that soap operas play an important role in Turkey in enabling discussions about taboos (emancipation, in this study's context), and Gollnhofer (2015) shows that conscious and voluntary breaking of taboos (here, dumpster diving) can help construct new moralities.

Concerning the deconstruction of taboos, Piha et al. (2018) stress the difference between the societal and individual levels of restriction. Even products, services, and practices that are societally de-tabooed may remain a taboo at the individual level—a phenomenon that might also exist in the case of infertility, as the affected women often perceive themselves as "defective" (Whiteford and Gonzalez 1995). Shame may represent an additional, internal barrier to the disclosure of fertility treatment.

2.2 Social Media

Kaplan and Haenlein (2010) define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (p. 61). However, for our topic of interest, distinguishing public blogging and social media platforms, such as YouTube, Instagram, TikTok, and Twitter, from rather private social media platforms, such as online forums and Facebook groups, is important.

In the context of conversational taboos, one benefit of using private social media platforms is the possibility to present a stigmatized self in a somewhat safe environment (Veer and Golf-Papez 2018). Moreover, online service communities (i.e., online communities developed by service providers to enable customers to interact with each other) have a positive effects on consumers' well-being, as they improve social connectedness and enjoyment (Parkinson, Schuster, and Mulcahy 2022). Important factors in this regard, which may be of relevance beyond service communities, are the positive, supportive, and personalized interactions, as well as the common ground between members. Even infertility-related research has included extensive investigations of the role of online forums for patients, which have been found to be an important source of information and emotional support and to be valued for their anonymity and availability (e.g., Hinton, Kurinczuk, and Ziebland 2010; Malik and Coulson 2008).

While the benefit of private social media platforms seems to lie in the exchanges occurring with only like-minded people, the users of public social media platforms are far more heterogeneous. However, public social media platforms have rarely been investigated in the context of taboo topics. Perhaps this is the case because of an apparent contradiction: Why should conversational taboos be publicly discussed on social media? Motives such as self-presentation and the need for belonging, which are usually regarded as decisive for social media use (Bughin 2007; Hennig-Thurau et al. 2004; Nadkarni and Hofmann 2012; Toubia and Stephen 2013), appear paradoxical in the context of taboos. Therefore, how people confronted with taboos may benefit from the use of public social media platforms remains unclear. Gurrieri and Drenten (2019) undertook the first attempt to approach this phenomenon. They suggest that stories of breast cancer survivors shared on Instagram, through normalizing the experience, provide social support to others affected by the disease.

3 Methodology

The subject of conversational taboos, and especially involuntary childlessness, being dealt with through YouTube is largely unexplored. To gain deep insights into this phenomenon, we conducted netnography, defined as “participant-observational research based in online fieldwork” aimed at arriving at an “ethnographic understanding and representation of a cultural or communal phenomenon” (Kozinets 2011, p. 60). This method is particularly well suited for sensitive topics, as researchers are able to observe subjects unobtrusively without risking biased behavior due to the researchers’ presence (Langer and Beckman 2005).

Fertility treatment is a suitable context for our research for three reasons: (1) Infertility and fertility treatment are considered conversational taboos (ESHRE 2017); (2) The issue has a strong presence on public social media platforms; and (3) It has high societal relevance, since one in six couples worldwide is affected by infertility (ESHRE 2017). We chose YouTube as the platform for our investigation because of the level of detail in which infertility is discussed on this medium. YouTube has 2 billion monthly logged-in users, and content of more than 500 hours is uploaded on the platform every minute (Youtube 2022). Owing to the high user activity, the rich data, and the frequent social interactions, the most important criteria for our netnography are fulfilled (Kozinets 2002). Most videos on YouTube fall under the category of blogs (Pex 2019), which is why we concentrated on these and excluded, for instance, purely informational or promotional videos. Adopting the perspective of a viewer of YouTube videos, we analyzed the advantages of a conversational taboo being discussed publicly on social media. The ways in which bloggers may benefit from social media use were considered by us only cursorily.

Data collection took place between December 2019 and January 2022. Scouting for German infertility bloggers on YouTube, we conducted searches using keywords (e.g., infertility, IVF, ICSI, wish for a child) which yielded several thousand results. The number of results was substantially reduced after we excluded professional videos from fertility clinics or physicians and documentaries. Moreover, we only included infertility bloggers who had (1) had first-hand experience with in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) and (2) more than 3,000 followers (to ensure the relevance of their YouTube channels). Based on the videos we viewed, YouTube's algorithm suggested videos by other infertility bloggers, which too we considered in our research. We repeated the search procedure several times during the two-year data collection phase to become aware of potential new bloggers. Finally, we identified five bloggers who matched our criteria. They are listed in Table 8.

In order to get the most comprehensive insights possible, we analyzed all infertility-related videos of all five bloggers (from disclosure of fertility treatment to pregnancy—if achieved—as well as review videos posted after conception), including all user comments on these videos. Thus, in total, 69 videos (amounting to about 21 hours) and 43,214 comments were assessed.

The need for active participation by the researcher in the online community is controversial in netnography (Kozinets 2011). Like several researchers before (e.g., Hewer and Brownlie 2007; Maulana and Eckhardt 2007), we chose to conduct a purely observational netnographic study in order to avoid having any influence on the behavior of the community.

We analyzed the data inductively. For this purpose, the YouTube videos had been transcribed verbatim and the MAXQDA software was used for coding. Data collection and analysis took place in parallel until new data did not add any value to our findings. During the period of data collection and analysis, we regularly discussed our impressions.

Two ethical questions frequently discussed in the context of netnography concern the need for community members to give their consent and the need for anonymization (Kozinets 2011). For a purely observational netnographic study (such as ours) in which only archival data are used, that the researcher does not necessarily have to reveal their identity nor obtain informed consent from the community is generally agreed. Moreover, in our study, we only investigated public YouTube channels with several thousand followers; thus, privacy concerns should not be significant in this context. Concerning anonymity, we decided not to anonymize the names of the channels: As only a handful of infertility bloggers have more than 3,000 followers on YouTube, one can easily identify the research subjects nonetheless. Moreover, since bloggers on YouTube voluntarily share their stories with an unknown audience without being able to control who watches their videos, we consider our approach of non-anonymization to be ethically acceptable.

Table 8. Description of Social Media Bloggers

Blogger	Name of YouTube Channel	Number of Followers	Number of Fertility-Related Videos	Number of Comments on Fertility-Related Videos	Current State
Saskia	Saskias Family Blog	439,000	31 (8h 07min)	40,930	Gave birth to a son and twins after five treatment cycles
Mel	Mel's Kanal	53,700	10 (4h 34min)	1,117	Gave birth to a son and twins after two treatment cycles
Saida	Saida Jahed	13,800	6 (1h 32min)	347	Still trying to conceive after two treatment cycles
Stina-Lotta	Stina-Lotta	4,830	9 (3h 50min)	396	Pregnant after the first treatment cycle
Kohliflie	Kohliflie's Gedanken	4,810	13 (3h 35min)	424	Gave birth to a son after the first treatment cycle

Note: All information as of March 2022.

4 Situation of Infertility Patients

Before we proceed to discuss the potentials of social media use in the context of taboo topics, we outline two aspects that are crucial for understanding the situation of infertility patients: (1) the emotional distress experienced during times of involuntary childlessness and (2) the perception of infertility as a taboo topic and the associated consequences.

4.1 Emotional Distress

The period of involuntary childlessness is characterized by fears, uncertainty, and emotional chaos that lead to high psychological distress. Fears, in part, relate to the treatment itself, which involves self-injections during the stimulation phase and a surgery to retrieve the eggs, as well as certain risks and side effects. Further, patients also fear treatment failure. Uncertainty is high with regard to fertility treatment, which has a success rate of only about 30%—increasing to 61% only if patients undertake three attempts (Blumenaur et al. 2018). As

Mel explains, “Again and again, you think, ‘What if I don’t get pregnant?’ and that’s bad enough, and then there are these injections, these hormones, these changes.”

One treatment cycle lasts about four to five weeks from the start of the stimulation phase until the pregnancy test. In each phase, there is the risk of something going wrong, making the cycle an “emotional rollercoaster” for patients. While a patient may be full of hope one day, the smallest setback can lead to the following day being characterized by despair—or the other way round, as in the case of Saskia:

> “This whole thing, this whole fertility treatment is always such an up and down of emotions. I can’t handle it at all. […] For me it was already clear that I will not get the baby. Then after coffee ground reading, everything looked good and I tried to believe that and now everything is really positive so far.”

One has to understand that bearing a child is a life goal for these women—and it is highly threatened. The importance of achieving pregnancy is evident, for instance, when Saskia struggles with holding back her tears in front of the camera after learning that her just-established pregnancy does not seem to be intact:

> “I am trembling right now. […] I’m just—I’m beside myself and I’m really close to tears. I really have to pull myself together not to start crying. […] Oh man, I am now—I am now really super sad, no shit. I’m super, super sad. I don’t know, I can’t think at all, I can’t speak. I have a lump in my throat, I have a lot of stomach pain and I’m waiting for the call that she [the physician] gives me more information.”

4.2 Taboo Topic

As is the nature of taboo topics, many of the people affected hesitate to communicate openly about infertility and fertility treatment. Stina-Lotta, for instance, received private messages from her followers in which they admitted the fear of negative reactions:

> “You have all written to me that this is such a taboo topic that you don’t even want to talk about it with your friends or generally don’t even want to mention it in society and don’t dare to talk about it because you will be looked at askance.”

This perception of infertility as a taboo topic and the fear of being judged by others seem to be firmly anchored in the mind of the women affected. This may be the case since bearing children has always been considered a social function of women, which infertile women are unable to fulfill (WHO Scientific Group 1992). Even bloggers, who share the most private aspects of their lives on social media, have to overcome their insecurity to talk about their fertility treatment in public, as the introductory sentence of Saskia’s first fertility-related video emphasizes. Saskia begins by admitting, “This video is not particularly easy for me and actually, I never intended to shoot this video.” Moreover, her followers consider her “brave” for addressing this topic in her videos.

If patients suffer from emotional distress related to fertility treatment and feel they cannot talk about it or do not feel understood, their mental burden increases further. A commenter on one of Stina-Lotta’s videos shares, “It is hard. Especially if you don’t have anyone in your social environment who is also going through this. Even in the family, there is sometimes no understanding or the topic is ignored.”

5 Positive Effects of Social Media Use on Patients' Well-Being

The emotional distress associated with fertility treatment and the distress caused by infertility's perception as a taboo topic pose a major risk to patients' well-being. We identified several ways in which the YouTubers addresses these two overarching problems. In this section, we first discuss how individual patients can benefit from the use of social media in the short term and then present the advantages of the issue's existence on social media to all infertility patients in the long term. Table 9 provides an overview of our findings, including supporting quotes. Finally, we briefly explain the potential risks of social media use in this context to avoid taking a one-sided approach to this issue.

5.1 Satisfaction of Individual Patient Needs

While we were exploring the role of social media in dealing with fertility treatment, three needs of infertility patients became evident: (1) the need for information; (2) the need for emotional support; and (3) the need for sharing experiences. We see YouTube as having the potential to address all of these needs and thereby promote individual well-being, first and foremost through enabling exchange with like-minded people.

.

Table 9. Benefits of the Public Discussion of Taboo Topics on Social Media and Supporting Quotes

Overarching Benefits	Subordinate Benefits	Exemplary Quotes
Satisfaction of patients' individual needs In the short term, social media bloggers support patients in fulfilling their fertility-related needs and, in this way, reduce the emotional distress accompanying fertility treatment.	Provision of information • Orientational • Medical • Tips	"It [the embryo transfer] was like going to the gynecologist, sitting down on this gynecologist's chair and then that was inserted as I said." (Saida) "The difference very briefly explained between an ICSI and an IVF is that in an IVF, in vitro fertilization, the sperm, which has been prepared and selected, is placed in front of the egg […], in ICSI, the sperm is injected directly into the egg with a needle." (Kohliflie) "I bought organic cranberry juice 100% from dm at the time of our treatment and drank every day from the beginning of the period 100ml (best chilled, does not taste particularly good) and that has helped (I believe at least in it) my uterine lining built up really good and thick […]. Maybe this tip will help you." (Follower of Saskia)
	Provision of emotional support • Empathy • Reassurance • Togetherness	"I wish all the others who also wish to have a child, who are also in the process, whether artificially or naturally, I wish you very, very good luck. I keep my fingers crossed for you." (Mel) "I literally devoured your videos before our ICSI. You really encourage me. Thank you for that!" (Follower of Kohliflie) "All the girls who are going through this or have been through this understand me, they know what I mean." (Saida)
	Platform for the sharing experiences	"I kind of feel like that's good for me, not to be silent about it, but just to talk about how I'm doing, how we're doing, what's going on, that not everybody is lucky enough to have a child easily." (Stina-Lotta) "Meanwhile, I think to myself, 'My God, there are really so many people out there who feel this way, and maybe it helps you if you talk about it somehow. And exchange ideas about it.' So for me personally, it helped and I'm kind of glad, it's such a load off my mind that I can share this with you now." (Saskia)

Table 9. Benefits of the Public Discussion of Taboo Topics on Social Media and Supporting Quotes *(continued)*

Overarching Benefit	Subordinate Benefit	Exemplary Quotes
De-tabooing and sensitization In the long term, social media bloggers change the society's perception of infertility and fertility treatment and this way, make seeking medical help as well as emotional support easier for future patients.	De-tabooing	"That's actually the reason why I'm talking about it, because I don't want it to be a taboo topic anymore." (Stina-Lotta) "I think it is important that I now somehow also go to the public with this topic and I have decided that I will accompany the next fertility treatment with the camera." (Saskia)
	Sensitization of society	"When you watch something like this, you learn to appreciate when you can get pregnant in a normal way." (Follower of Kohliflie) "I just want to say that there are really so many families where it doesn't work out and that you don't even realize beforehand that it might not work out." (Mel)
	Sensitization of the people affected	"(The gynecologist) told me, 'That's not okay, you have to have a checkup! If nothing happens after a year of trying, then you should see what the problem is.' And that is what I would like to point out to you today: Please do not try for years in vain, let yourself be checked! Often, there is a reason why it doesn't work." (Saskia) "Thanks to you, we have found the courage not to give up our desire to have children so quickly." (Follower of Mel)

Information

The first potential of fertility-related video blogs on YouTube lies in the provision of information. In other contexts too, information seeking is a common motive for consumers to resort to blogs (Cosenza, Solomon, and Kwon 2015), especially if the topic of interest is complex and the consumer highly involved (Riegner 2007), as is definitely the case with fertility treatment.

In the first place, bloggers share their own experiences and, in this manner, give affected others an idea of what to expect from treatment—for instance, in terms of the procedure at the fertility clinic, side effects of medication, and financial aspects. Viewers receive first-hand information at a level of detail that they would barely have access to through any other medium. In literature, this is referred to as storytelling, a "form of communication through which people are able to represent their self-reflected experiences and understanding of the world" (Gurrieri and Drenten 2019, p. 703). Mel, for instance, describes precisely the premises and the procedure followed on the day of oocyte retrieval:

> "There are sperm sticker on the floor, so the man knows, 'Okay, that's where I have to go.' And I had to go directly into this—I don't know what to call it—surgery room […]. Then I had to put my shoes under the bed on which I would later lie, and had to go behind such a room divider to undress. And then I had to sit in a normal gynecologist's chair and got a blanket over my legs so that I didn't feel so naked and helpless while other people were muddling around."

Some bloggers even take their followers live with them during treatment—in video diaries or so-called "follow-me-arounds"—giving viewers even more realistic insights into what to expect from treatment. Kohliflie, for example, has filmed a diary of her stimulation phase; in three videos of more than 45 minutes in total, she describes in detail how she feels during different stages of the stimulation phase. Mel, in another example, even has herself filmed in the recovery room after her oocyte retrieval, while still under the influence of anesthesia.

That this kind of information is valuable to viewers is evident from the feedback the bloggers receive in the comments and via private messages. For instance, a user has commented under one of Kohliflie's videos, "Your videos have helped me quite a lot. Also with the appointments in the fertility clinic. Now I knew at least how it goes ;-) Thank you very much!"

Bloggers moreover receive questions from their viewers, underlining the latter's interest. Stina-Lotta, for example, has been asked "how [her] husband and [she] deal with the desire to have children and the pressure that builds up." In this particular case, Stina-Lotta has directly replied to the user in the comments, but bloggers also commonly produce question-and-answer (Q&A) videos to address multiple user questions. In one way or another, viewers usually get a response to their questions and receive the information they seek.

In addition to providing "orientational" information, bloggers also embed medical information in their stories. For instance, when Stina-Lotta shares that her anti-Müllerian hormone (AMH) level is as low as that of a 40- or 50-year-old and that this is the reason for her infertility, she also explains what the AMH level actually means:

> "It (the AMH level) tells you how high the chance is that you still have eggs and that you can therefore become pregnant. The AMH value is relatively high in women who are, let's say, around 20–25 years old, who are at an age where you can normally have healthy children. And then it becomes less and less from 25 onwards and when you are around 40, it is already low and when you go through menopause, it is zero."

As such information is embedded in the bloggers' stories, viewers get to learn medical facts on the side.

Moreover, the audience also receive advice from the bloggers, who recommend, for instance, fertility clinics and nutritional supplements or—in the case of Saskia—share how best to approach fertility treatment emotionally:

> “I think it’s not good if you really only lie down in bed and only think about this one thing and do everything for it. Of course, you should do everything for it, but normal life must also go on and you must actually try to deal with it as normally as possible.”

So far, we have only reported how viewers can benefit from YouTube videos, but blogging is not just one-way communication: Bloggers too are provided with orientation, medical information, and recommendations from their community—via comments or private messages. Mel, for example, shares that she took a follower’s tip to heart and now regularly drinks pomegranate juice during the stimulation phase:

> “Last time, it (the uterine lining) was not so well developed for the stage I was in. And a dear subscriber gave me the tip under the last fertility update that I should try drinking pomegranate juice—very important, mother’s juice—and for me it started on Saturday, the first day of my cycle. As soon as I got my period, I drank 100 milliliters.”

Emotional Support

A second potential of social media lies in the provision of emotional support. The term “emotional support” is not defined uniformly in literature (Langford et al. 1997). While some define it as the provision of care, empathy, love, and trust (House 1981), others also include reassurance (Dale, Williams, and Bowyer 2012) or belonging (Cobb 1976) in their definitions. We could observe all these facets of emotional support in our data.

Besides sharing their own experiences, the bloggers considered in this study also speak to their respective communities and express their empathy to those also affected by infertility. Saskia, for example, regularly wishes her viewers luck for their upcoming treatments:

> "In any case, I wish all the girls out there who are also doing or approaching fertility treatment, I really cross my fingers and hope, hope, hope that it will work. Never lose faith and hope, sometimes in life you have to fight for your happiness, I think."

Importantly, however, the bloggers not only address the community as a whole, but also interact with individual followers. For instance, in her first video, Kohliflie talks about her problem in conceiving again, although she already has two teenage children. When a follower responds that she is going through exactly the same situation, Kohliflie not only wishes her luck, but also starts a conversation and encourages the follower to stay in contact:

> "Of course I'll keep my fingers crossed for you regarding your IVF/ICSI. If you like keep me updated! :) I like to join in the excitement :) […] Have you already thought about which transfer you would like to do?"

Through this kind of interaction, bloggers give their followers the impression of being cared for. Moreover, such interactions have been found to build parasocial relationships (Labrecque 2014). We assume that this imaginary relationship with a blogger, which results from the viewer spending time with them through media and is characterized by the viewer's perception of knowing the blogger well (Brown 2015), makes the emotional support even more valuable, similar to the support of a good friend.

In addition, bloggers emotionally support their followers by providing reassurance to those undergoing or planning to undergo fertility treatment for the first time. When they report on their own experiences, they not only convey pure information, but also help ease patients' fear of treatment—or as Mel puts it, "the fear of the unknown." While undergoing her second treatment cycle, Mel remembers what it was like when she had to inject herself for the first time: "The first time, I was mega scared, really." But in the end, "the overcoming was worse than the pain. […] It burns a little. But only a very little bit, nothing painful." Her intention with this statement is evidently to calm other women who face the same situation. In general, patients' fears seem to reduce when they know what to expect from treatment. One of Kohliflie's viewers explains, "In December I start with the down regulation (pill and nasal spray) and I am super nervous … and a little scared…. But your videos have helped me quite a lot."

That bloggers convey not only facts, but also emotions in their experience reports is crucial to storytelling (Pera and Viglia 2016). Through gaining deep insights into the feelings of the bloggers, viewers often recognize themselves; for instance, a person who watched Saskia's video on returning to the fertility clinic after a while has commented:

> "I can relate to your feelings so well. My husband and I have been trying to have a child for almost 7 years now. Fear, the unknown, hope, mixed with anticipation and excitement. Then the memory of what you have experienced so far. A pure emotional rollercoaster."

Through these videos, patients realize that they are not the only ones dealing with the stressful situation. This is important, as feelings of loneliness is a recurring theme in infertility-related videos, and the associated comments show how much it burdens those affected. In general, the desire to be part of a community is a common motive for social media use (Hennig-Thurau et al. 2004; Nadkarni and Hofmann 2012), which is seemingly all the more important for people confronted with taboo topics, who experience isolation in the offline environment. Thus, the bloggers directly address this need for a sense of togetherness. Stina-Lotta shares:

> “The fact that you all wrote to me motivated me to say, ‘We all have to stick together and we all have to go through this’ and somehow, I think it’s a shame that you think—and I really thought it too—that I’m one of only a few who don’t have it easy to get pregnant.”

To this, a viewer has responded, “Maybe this is stupid to say, but somehow I feel good, because I know that I’m not alone with it…. Thank you for the video, for sharing. I feel the same way.” Although research has found that the use of social media can aggravate loneliness (Kim, Larose, and Peng 2009), in the context of taboo topics, as evidenced by the above statement, affected people experience a sense of belonging when watching relevant YouTube videos.

Again, viewers are not the only ones who benefit from the emotional support available on YouTube—bloggers do as well. Through comments and private messages, followers express their empathy wishing the blogger luck with their treatment, encourage them to persist after a setback through sharing their own success stories, and provide belonging support by assuring that they understand what the blogger is going through. For instance, upon sharing a particularly emotional moment with her followers after learning that her just-accomplished pregnancy does not seem to be developing as expected, Saskia receives much support and encouragement from her followers. She explains:

> “You gave me so much strength. You wrote me so many messages. Also privately, my girls, my friends, all who experience the same, what I didn’t even know, they said, ‘Saskia, don’t go crazy, this is super often the case that the child is somehow a week behind in terms of development, many children catch up again.’ Or so many wrote, ‘I still gave birth to a completely healthy baby, it didn’t make any difference at all.’ And that gave me so, so much courage and then I felt much better.”

Sharing Experiences

The third potential of social media is the opportunity to share personal experiences with other users. Disclosure of distressing experiences has been shown to have a positive effect on a person’s well-being (see, e.g., Frattaroli 2006, for a meta-analysis), but infertility patients often hesitate to disclose their treatment to family and friends or feel like a burden to them if they do. In this regard, social media represents a platform where patients can still get rid of their worries. For instance, Stina-Lotta shares,

> “I realized after I published my video how good it was for me. And how relaxed I am now. […] It was good for me because I was able to talk to so many people. And I was able to get the whole thing off my chest.”

Clearly, YouTube is a platform where bloggers can share their experiences, but followers can share theirs as well. Research suggests that especially people who feel socially apprehensive—as do many infertility patients—tend to resort to social media to share their experiences; due to its undirected nature, they do not have to bother anyone in particular (Buechel and Berger 2018). Moreover, bloggers often even encourage their followers to do so. Stina-Lotta shares:

> "I wanted to make sure that you talk about it. It is very, very important for the psyche. […] I wanted to thank you for giving me your trust and sharing with me how you feel. Please continue to be so brave and talk to me."

Storytelling is not only the most common form of blogging, but also very present within user comments. For instance, when Kohliflie reflects on her experiences after her embryo transfer, one user, who seems to be in a similar phase of treatment, shares her own experience in the comments:

> "Today is a really shitty day … already in the morning I just started crying … so ridiculous that I had to laugh at myself … but I am overcome by the feeling and it will not let go that it did not work and it feels very much like my period … a great emptiness spreads through me…."

5.2 De-tabooing and Sensitization

Another great potential of social media concerns the de-tabooing of sensitive topics. The public perception of infertility as a taboo topic poses a threat to patients' well-being, as it promotes isolation. Therefore, engagement in de-tabooing activities is a desirable development. The bloggers considered in this study communicate openly about their infertility and their fertility treatment, and—more importantly—they do it publicly. By violating the taboo, the bloggers contribute to its deconstruction. In other contexts, research has already proven that the breaking of taboos can help construct new moralities (Gollnhofer 2015). Stina-Lotta is a blogger who actively promotes the de-tabooing of infertility, not only through talking about the issue herself, but also through encouraging others to do the same:

> "In any case, I want to plead for you to talk about it. Of course, you don't have to do it in front of the camera like I do, but find a good friend, your mom, a friend, a brother, a sister, whoever, and talk about it. That is very, very important and I also want to fight for that a little bit, that it is not a taboo topic."

In fact, everyone who is open about their infertility contributes a small piece to the de-tabooing of the issue. In this regard, bloggers' influence is clearly an advantage. Bloggers reach not only other infertility patients, but also people who are not affected. This observation applies especially to those bloggers who started blogging about other topics and thus already had a broad audience before starting to address the topic of infertility. Probably the best example is Saskias Family Blog, with currently more than 400,000 followers, which was formerly called Saskias Beauty Blog and comprised makeup tutorials.

If these bloggers embed updates on their fertility treatment in videos on other topics, their chances of also reaching people not affected by infertility are even higher. Mel, for instance, often does so; in the videos entitled "FMA#6/ 1. Appointment Fertility Clinic/ Cold/ Everyday Family Life" and "FMA#8/ Fertility Clinic /Breastfeeding loop sewn/ Bread burnt," she combines the subject of fertility treatment with other topics of her daily life.

As infertility is hardly discussed in public, society in general knows little about the situation of infertility patients and treatment opportunities. Thus, the related YouTube videos contribute to the public's education in this regard.

First, the audience get an idea of how many people are affected by infertility and learn how to behave sensitively towards them. Bloggers generate a better understanding of the situation of infertility patients through sharing their own stories and feelings and, moreover, providing concrete recommendations on how to interact with people suffering from infertility. Saida, for example, states:

> "I can definitely say that this whole fertility treatment and everything, is not to be joked about. I think one should deal with this topic more sensitively with the people who go through this, because it is not easy. So no matter how happy they show themselves from the outside, it's really a huge burden inside."

We know from the comments under the videos that the topic arouses great interest also among those who are not affected by infertility and that bloggers indeed succeed in sensitizing people who previously had no contact points with this issue. Two user comments on Saskia's videos illustrate this: "I just find it very hard to see in the comments how many are going through the same thing as you and it just makes me personally really sad because I was lucky enough to get pregnant right away" and "This topic does not affect me personally, but I still find the way you are going very interesting! Thank you for taking us with you!"

The second important aspect of educating society is the sensitization of those who are or will one day be affected by involuntary childlessness, but hesitate to seek medical help—be it due to unawareness or shame. Again, bloggers educate these people on the side about treatment opportunities. For one of Saskia's followers, the videos seem to be a deciding factor for why she is now, after several years of involuntary childlessness, taking a closer look at treatment opportunities. She comments, "How much does such a fertility treatment cost? … Unfortunately, I have the same problem, we have been trying for three to four years… and it has never worked…."

Furthermore, bloggers address these people directly. Saida herself has a cultural and religious background that made it difficult for her to seek fertility treatment, but she encourages others not to hesitate:

> "And especially for women who do not dare to go to a fertility clinic because their parents say so, because the culture has somehow taught them to do so, or in general, do not listen to them. What is wrong with going to a fertility clinic? It doesn't make any sense."

6 Negative Aspects of Social Media Use

Apart from noting all the benefits, we also identified some potentially concerning aspects of social media use: Those result from the facts that (1) Infertility patients are a particularly vulnerable target group; (2) Bloggers are no medical experts; and (3) Fertility treatment is highly individual. In these regards, reckless actions by social media users may substantially harm patient well-being.

Previous research has already highlighted the vulnerability of infertility patients in terms of lack of control during treatment (Robertson et al. 2021). Thus, it is no surprise that patients strive for a certain degree of controllability through trying any measure to enhance their chances of success. As mentioned earlier, the exchange of tips on topics from nutritional supplements to fertility clinics is very common on YouTube. However, there is a fine line between a recommendation and advertisement, as the following excerpt from Saskia's video emphasizes:

> "I currently use—because I also tried to inform myself in the matter of natural medicine—the products of Robert Franz. […] I can also link this for you in the infobox or you just search for 'Robert Franz' on Youtube. […] I've become a little fan. I think he's really great and, for example, also the topic of fertility treatment, you can take a look, it's very, very interesting what he says about it."

As Saskia makes clear, she does not have a paid collaboration with Robert Franz. Yet, she recommends costly products whose effectiveness may not be proven, exposing her vulnerable viewers to the risk of exploitation.

The second disadvantage of social media use is the exposure to criticism. Although positive comments clearly predominate the studied YouTube videos, one can also find some negative ones, such as, “Why don’t you just accept the fact that you can’t have children?” and the accusation that fertility treatment is an “artificial interference with nature” (both comments on Saskia’s videos). Of course, such criticism concerns bloggers in the first place, but also users who are in the same situation may feel triggered, as the comments are public. Especially since many infertility patients already feel ashamed and hesitate to seek medical help, comments like these seem counterproductive.

Another concern is that bloggers also convey medical information through their videos, despite usually not having any professional medical education. Although not intended by bloggers, the risk of finding incorrect information on YouTube, especially in a medical context, is posed to users. Considering prior research’s finding that the expertise of a blogger does not affect their users’ assessment of their credibility (Balabanis and Chatzopoulou 2019), this risk seems severe. We can confirm that users sometimes mistake bloggers for medical experts, asking them, for instance, about potential side effects. For instance, a viewer of Kohliflie’s video has commented, “Can you maybe tell me if severe chest pain can occur after taking Ovitrelle 1,600 IU (International Units)? I keep searching on Google, but do not find any information on this.” Although we were not able to assess the accuracy of Kohliflie’s response, even that patients seem to rely on information provided online by a layperson without discussing it with their physician is concerning.

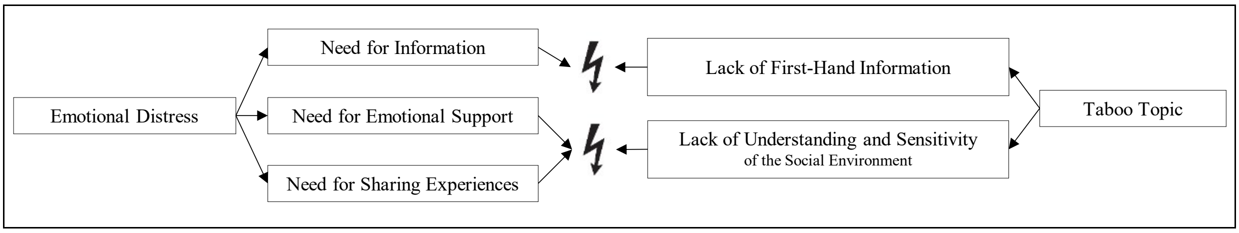
In a similar concern, highly individual aspects of treatment are discussed on YouTube, such as medication dosage. Apparently, patients lack the expertise to understand why prescribed dosages differ, but instead of trusting their physician, some get rattled and, in the worst case, even consider adjusting their dosage by themselves. The following statement by Saskia emphasizes that even bloggers themselves get rattled as a consequence of discussing medication in detail:

> “My physician said I should take three tablets a day. One tablet contains 1,000 units and then I would be at 3,000 a day. Now many of you told me […] that it is far too little. […] I trusted my physician all the time. […] Nevertheless, it is the case that I began to waver.”

7 General Discussion

We identified two overarching potentials of public social media channels in contributing to the well-being of people confronted with conversational taboos—in both the short term and the long term. In the short term, public social media channels are able to fulfill the acute personal needs of those affected, such as the need for information, emotional support, and sharing experiences, similar to the benefits of more private social media platforms (Kahlor and Mackert 2009; Richard, Badillo-Amberg, and Zelkowitz 2017; Wingert et al. 2005). These needs emerge due to the high emotional distress experienced by those who have to deal with taboos involuntarily. As by their nature conversational taboos are hardly discussed, those affected face difficulties in having exchanges with like-minded people in the offline environment who could provide them with first-hand information and show understanding. Family and friends, on the other hand, are often perceived as unsuitable as a source of emotional support and as an outlet for the sharing of experiences, because they lack sensitivity and understanding regarding the person’s situation. These mismatches are illustrated in Figure 9.

Figure 9. Mismatches Between Consumer Needs and Realities in the Offline Environment



In the long term, public social media platforms contribute to the de-tabooing of fertility treatment and the education of society in this regard, making open communication easier for current, as well as future, cohorts of people affected. In other words, social media blogs dealing with taboo topics directly target both mismatches and work on their deconstruction.

Through carefully weighing the potentials and disadvantages of social media use, we are able to substantially contribute to the literature, derive important practical implications, and uncover opportunities for future research in this field.

7.1 Theoretical Contributions

The current paper contributes to the literature in several ways. First and foremost, we contribute to transformative service research by outlining an opportunity to enhance the well-being of people suffering from taboos—both in the short term and in the long term—through social media use. Choosing people confronted with taboos as our research subjects, we have responded to the call by Ostrom et al. (2015) to focus on the well-being of particularly vulnerable target groups.

In the short term, social media provides individual consumers with information, emotional support, and a platform for sharing experiences. So far, the relevant literature has regarded social media first and foremost as a tool for presenting oneself and receiving social benefits (e.g., Hennig-Thurau et al. 2004; Nadkarni and Hofmann 2012; Toubia and Stephen 2013). While self-presentation seems to be totally subordinate for consumers of YouTube videos dealing with taboo topics, receiving social benefits at least holds true to a certain extent. Considering the sense of belonging, which is frequently provided within the YouTube community of infertility patients, as a facet of emotional support, we address one of the priorities in service research recently set by Field et al. (2021) concerning isolation and engagement with similar others on social media. We found that the togetherness experienced online helps patients cope with the perceived loneliness in the offline environment and even encourages them to fight isolation through disclosing their experiences to family and friends.

Moreover, provision of support, which in general is seen as not very important on social media (Al-Menayes 2015; Bughin 2007), is rather common within the YouTube community of infertility patients. Thus, highlighting that motives for social media use in the context of taboo topics differ significantly from general motives, we substantially contribute also to social media research.

In the long term, bloggers on YouTube are able to promote the de-tabooing of sensitive topics, making life easier for future generations of affected people. We extend the existing research on the deconstruction of taboos (e.g., Gollnhofer 2015; Michelson and Miller 2019; Yalkin and Veer 2018) through presenting social media as an important tool and bloggers as valuable supporters in the fight against societal perception of sensitive topics as taboos.

Furthermore, we also complement the storytelling literature. While previous research has predominantly focused on the potentials of storytelling solely for marketers (e.g., Pera and Viglia 2016; Woodside, Sood, and Miller 2008), we outline how story consumers and even storytellers can benefit. We support the findings of Gurrieri and Drenten (2019) that storytelling in the context of taboo topics provides informational and emotional support for similar others, but also suggest that storytelling fulfills a blogger's own need to share their experiences.

Finally, by touching upon the need for sharing experiences, we draw attention to a previously neglected need of infertility patients. While the need for information and the need for emotional support have already been discussed in various studies on Internet use by infertility patients (e.g., Richard, Badillo-Amberg, and Zelkowitz 2017; Wingert et al. 2005), the need for sharing experiences, which seems to be particularly pronounced for infertility patients, has been barely considered in research.

7.2 Practical Contributions

Our research has important implications for people confronted with taboos, as well as for bloggers and relevant service providers such as fertility clinics.

First, we encourage people affected by infertility to turn to social media when seeking first-hand information, emotional support, or an outlet for sharing experiences. However, they must exercise caution concerning medical information and recommendations of products and services on social media. Patients should always cross-check medical information sourced from laypeople with the treating physician before, for instance, adapting medication or buying expensive nutritional supplements. Overall, social media use should never replace a detailed consultation with the physician. Although social media seems to be an important means to fulfill the three fertility-related needs (i.e., for information, emotional support, and sharing experiences), we suggest infertility patients to also communicate openly in the offline environment, as doing so can prevent isolation and have a positive effect on well-being (Beals, Peplau, and Gable 2009). Moreover, everyone who engages in discussions about a taboo topic helps deconstruct it and normalize the experience.

For service providers such as fertility clinics, we recommend greater focus on consumer well-being, as the high emotional distress a consumer experiences can be a reason for them to terminate a service prematurely (Brandes et al. 2009). Our research findings suggest that incorporation of social media in the consumer support strategy, for instance, through collaborations with YouTube bloggers, may be a measure valued by consumers. To enable patients' exchange with like-minded people, similar to that on YouTube, service providers could also establish online service communities that have a demonstrable positive effect on consumers' well-being (Parkinson, Schuster, and Mulcahy 2022). However, while encouraging consumers to refer to social media, service providers should also sensitize them to the risk of inaccurate or biased information online and provide access to trustworthy sources of information.

De-tabooing should also be a long-term goal for fertility clinics and providers of tabooed services, as it will reduce the barriers for potential future consumers. Again, collaborations with YouTube bloggers, as part of bigger campaigns, could be helpful in this regard. As prior studies have shown, the (presumably) intrinsic motivation of infertility bloggers may raise consumers' interest in the service (Hamby and van Laer 2022). Moreover, service providers may also educate society on taboo topics (e.g., infertility), for example, through providing guidelines for family and friends on how to behave sensibly when interacting with people affected.

Finally, we value the efforts of all bloggers in being an important source of support for people confronted with taboos and contributing to the normalization of taboo topics. Nevertheless, we appeal to them to refrain from providing medical information that might be inaccurate or highly individual and to be considerate when offering recommendations and promoting advertisements, keeping in mind the vulnerability of their target group.

7.3 Limitations and Future Research

Like any study, this one has its limitations that offer opportunities for future research. The main question concerns the generalizability of the findings, concerning both the context and the platform. We suggest that the distress experienced by people confronting taboo topics and their associated needs are comparable across many tabooed topics, such as mental illnesses and sexually transmitted diseases. We therefore assume that our findings are, to a certain extent, transferrable to other tabooed high-emotion services (and medical services in particular), which needs to be verified through further research. Moreover, due to their unavailability, we were not able to investigate male infertility bloggers on YouTube. In this regard, whether this lack of male bloggers is context-specific or whether men are generally more hesitant to discuss taboo topics than women would be interesting to explore.

In the current research, we have concentrated on YouTube because of the (relatively) high presence of the topic of infertility and the level of detail in which it is discussed. However, the use of other social media platforms might offer different advantages. For instance, bloggers on YouTube sometimes mention that they run a channel on Instagram or TikTok in parallel, where they post shorter updates at higher frequencies. These may be particularly interesting platforms for further research, also considering that they are rather popular among younger generations.

E Conclusion

1 Summary of Findings

The aim of this dissertation was to examine the topic of fertility treatment from different angles to gain a comprehensive understanding of the situation of infertility patients and thus, being able to derive strategies to reduce (1) the barrier to seeking help when experiencing infertility and (2) the level of emotional distress during treatment. For this purpose, three empirical studies were conducted, focusing on three substantial characteristics of fertility treatment: the characteristics of being a temporally extended service, a high-risk service, and a conversational taboo. Figure 10 provides an overview of the main findings in the form of concise answers to the research questions.

The first paper examines the patient journey of those undergoing fertility treatment. Focusing on the core touch points (i.e., initial consultation, start of treatment, oocyte retrieval, and embryo transfer), differences in the level of distress and fertility-related needs were examined over the course of a treatment cycle and across multiple treatment cycles. The results of this study support previous research that suggests that women experience increased distress at the end of a treatment cycle and during follow-up treatments. Furthermore, the results highlight women's high level of distress before the first service encounter, similar to that at the end of a treatment cycle. In regard to infertility-related needs, significant differences were found in the need for information and emotional support. The need for information is strongest before the initial consultation, decreases afterward, and remains at a lower level. The need for emotional support, on the other hand, remains constant during the first phases of treatment and increases before embryo transfer. Bridging the gap between emotional distress and fertility-related needs, the results suggest that experiencing uncertainty—regardless of its origin (e.g., due to a lack of information before initial consultation or during fertilization, which is inherently uncertain and uncontrollable)—increases emotional distress.

Building on this, the second paper identifies strategies that infertility patients apply to cope with the uncertainty they experience during treatment. Most importantly, the findings confirm the assumption that uncertainty is a major source of distress during fertility treatment. Against this background, six coping strategies were identified, two of which patients apply to cope with uncertainty, namely (1) assessment of subjective probabilities and (2) expectation management, and the other four to cope with anticipated failure, namely (3) preparation, (4) risk reduction, (5) avoidance, and (6) emotional processing. The concept of the anticipated outcome was included in the developed model to explain differences in patients' coping behavior. Twelve tactics subordinate to the six coping strategies broaden the model. Finally, as well as the actual topic of interest, a further source of distress for infertility patients became evident during the study: the perception of infertility as a societal taboo, leading to the focus of the third paper.

The third and final paper of this dissertation focuses on fertility treatment as a conversational taboo and stresses the role of public social media channels in overcoming this issue. It is suggested that infertility patients benefit from public social media channels in two ways. In the short term, such channels help them to satisfy their personal needs for information, emotional support, and sharing experiences by enabling exchange with like-minded people. Due to the perception of infertility as a taboo topic, most patients have difficulties finding such exchanges offline. In the long term, public social media channels contribute to the de-tabooing of the topic and to the sensitization and education of society, especially of potential future patients. In this regard, the benefit lies in the immense reach of social media bloggers.

Figure 10. Overview of Main Findings

Paper 1 – **Fertility Treatment as a Temporally Extended Service**	**Paper 2 –** **Fertility Treatment as a High-Risk Service**	**Paper 3 –** **Fertility Treatment as a Conversational Taboo**
How do emotional distress and fertility-related needs evolve (1) over the course of a treatment cycle and (2) across multiple treatment cycles?	*How do consumers cope with uncertainty in high-risk services?*	*How can public social media channels contribute to the well-being of consumers confronted with taboo topics and suffering from stigmatization?*
→ (1) Patients' level of emotional distress takes a u-shaped course, the time before initial consultation and before embryo transfer being perceived as most stressful. The need for information is strongest at the beginning, while the need for emotional support rises at the end of a treatment cycle. → (2) Patients' level of emotional distress is higher in follow-up attempts than during the first treatment cycle.	→ Consumers use two strategies to cope with the uncertainty of high-risk services, namely, (1) assessment of subjective probabilities and (2) expectation management. Four more coping strategies are applied if consumers anticipate a negative outcome, namely, (3) preparation, (4) risk reduction, (5) avoidance, and (6) emotional processing.	→ Public social media channels (1) help to satisfy infertility-related needs (i.e., need for information, emotional support and sharing experiences) of individual patients in the short term, and (2) contribute to the deconstruction of the taboo in the long-term, as well as to the sensitization and education of society.

2 Theoretical Contributions

From a theoretical perspective, this dissertation offers valuable contributions to various research strands: fertility literature, service literature, and social media research. First, all three papers add to the fertility literature by providing a better understanding of the situation faced by infertility patients. Paper 1 addresses a specific gap in the literature, namely changes in emotional distress and fertility-related needs along the patient journey. Although changes in emotional distress have received considerable attention in previous research (see Verhaak et al. 2007 for an overview), the time around initial consultation has been neglected in these studies. Moreover, changes in fertility-related needs have only been studied superficially so far (see Gameiro et al. 2015 for the only relevant article). Paper 1 stresses in particular the relevance of the phase before the initial consultation, which is one of the most distressing phases for female infertility patients and has been overlooked in previous research. Moreover, significant differences in the need for information and emotional support are identified, with the former peaking before initial consultation and the latter before oocyte retrieval. Interestingly, these are the two most distressing phases of treatment, which suggests a relation. Paper 2 and Paper 3 add to the fertility literature by shedding light on two specific sources of patients' emotional distress: the uncertainty involved in fertility treatment and its perception as a taboo topic. To the best of the author's knowledge, strategies for coping with uncertainty have not yet been studied in this context, which is why Paper 2 makes a fundamental contribution to the understanding of infertility patients' reaction to emotional distress. On the other hand, patients making a secret of their treatment and therefore lacking social support is an omnipresent problem in the fertility literature, and the important role of online forums in providing this support has been widely studied (e.g., Hinton, Kurinczuk, and Ziebland 2010; Malik and Coulson 2008; Malik and Coulson 2010). However, although public social media platforms seem to have gained importance in this regard, they have rarely been examined in the literature (for exceptions, see Blakemore et al. 2020; Johnson, Quinlan, and Pope 2019; Kelly-Hedrick et al. 2018). The value of Paper 3, however, lies not only in its focus on public social media platforms, but also in the finding that social media—in addition to being a platform of receiving and providing social support—plays an important role in de-tabooing the topic of involuntary childlessness.

Second, contributing to the service literature, Paper 2 addresses the uncertainty involved in many services and particularly in fertility treatment. In service research, uncertainty has to date been examined only in regard to decision-making (e.g., Bordley 2001; Sun, Keh, and Lee 2012) and coping strategies have been investigated only in the context of service failures (e.g., Gabbott, Tsarenko, and Mok 2011; Gelbrich 2010; Strizhakova, Tsarenko, and Ruth 2012). Paper 2, therefore, provides insights into strategies for coping with uncertainty whose relevance goes beyond the context of fertility treatment: They are also valuable for other high-risk and high-emotion services as long as they involve temporal divergence between the first service encounter and the service outcome. Furthermore, this dissertation adds to a specific research strand of service research, namely transformative service research. By placing the well-being of a particularly vulnerable consumer group under scrutiny, all three papers respond to the call for research by Ostrom et al. (2015). Moreover, Paper 3 addresses the more recent and more specific calls for research into how consumers use social media to "balance isolation from others with engagement only with similar others" (Field et al. 2021, p.5) and how barriers to the use of transformative services can be reduced (Ostrom et al. 2021).

Third, this dissertation, or more precisely Paper 3, adds to social media research by investigating the role of public social media platforms in a context in which it has been neglected so far, namely taboo topics. In that paper, it is highlighted that, of the motives that are usually regarded as most decisive in public social media use, namely self-presentation and social benefits (e.g., Hennig-Thurau et al. 2004; Nadkarni and Hofmann 2012; Toubia and Stephen 2013), only the latter seems to be of relevance for users following infertility bloggers.

Moreover, provision of support, which is in general seen as less important when discussing motives for social media use (Al-Menayes 2015; Bughin 2007), is quite common among infertility patients active on YouTube. Overall, the purpose of social media use seems to differ significantly in the context of taboo topics.

3 Implications for Service Providers and Patients

From a managerial perspective, this dissertation aimed to identify ways to enhance the well-being of couples affected by infertility by reducing (1) the barrier to seeking medical assistance to fulfil their wish for a child and (2) the level of emotional distress during fertility treatment. The findings have implications for service providers and consumers.

Concerning the barrier to seeking medical help, Paper 1 revealed that the phase before the initial consultation at the fertility clinic is particularly stressful for patients and the need for information is high. When patients consider fertility treatment, but hesitate to pursue it, it would be helpful if fertility clinics provided low-threshold offers such as online consultation hours or live chats preceding the initial in-person consultation. However, it is difficult for fertility clinics to relieve and inform potential patients if they do not take the first step (i.e., contacting the fertility clinic or at least visiting its website or social media channels). Instead, gynecologists are usually the first ones consulted when trying to conceive, especially if it takes longer than expected. However, many patients report lack of support by their gynecologist, stressing the additional need for fertility clinics to create awareness about the issue of infertility among medical practitioners. Moreover, measures need to be taken to create awareness about the issue in society. This, however, is not solely the responsibility of fertility clinics, but also of policy-makers, health insurance companies, non-profit organizations, among others. As well as the lack of awareness, the perception of infertility as a taboo topic is an additional barrier to seeking medical help. As long as infertility is perceived as something to be ashamed of, couples affected will have difficulty accepting that they need medical assistance and wait as long as possible until considering fertility treatment. One important way to address the lack of awareness and the public misperception is the use of public social media platforms. Paper 3 shows that many bloggers already cover this topic and highlights their potential to push forward the de-tabooing of the topic. Therefore, fertility clinics (and policy-makers, health insurance companies, non-profit organizations, etc.) should promote the topic on public social media platforms, for instance, by establishing their own social media channels, collaborating with established and potential infertility bloggers, and being available for guest appearances on other channels.

Consumers can contribute to the de-tabooing and the lack of awareness by not making a secret of their fertility treatment. Of course, it cannot be expected that every patient becomes a social media blogger, but everyone who has experienced infertility can share his or her experience in the offline environment among family and friends, thereby normalizing it and reducing the barrier for potential future patients.

Regarding the high emotional distress during treatment, Paper 1 shows how fertility clinics can best support their patients in different phases of treatment. While providing information is suggested to help at the beginning, emotional support is particularly needed in later stages—for instance, between oocyte retrieval and embryo transfer. In these phases of uncertainty, there is usually little contact with the treating physician, which is why it is difficult for him or her to provide the support needed and patients cope with the uncertainty predominantly on their own. The findings of Paper 2 generally encourage patients to actively process their emotions by disclosing fertility treatment to family and friends to reduce distress, but social media can also be an outlet here. Furthermore, potentially successful coping strategies for patients would be to prepare for a negative outcome, for instance, by planning ahead or shifting life goals, or to sometimes engage in other activities to distract oneself from the uncertainty. However, patients need to be careful when buying additional services or products, as they tend to spend a great deal of extra money on questionable measures. It is the responsibility of fertility clinics to encourage patients to use favorable coping strategies while preventing them from applying unfavorable ones (e.g., by creating transparency concerning the cost–benefit ratios of additional measures). The option of using social media for relief is strongly supported by the findings of Paper 3. The potential of satisfying infertility-related needs, and in particular the need for emotional support and sharing experiences, is enabled through the exchange with like-minded people, which many patients lack in their offline environment. Fertility clinics should encourage their patients to make use of this opportunity, for instance, by recommending or collaborating with relevant channels. However, if fertility clinics criticize these platforms for lack of professional moderation, another option would be to create an internal platform that enables patients to connect with each other.

4 Limitations and Future Research Directions

The idea of this dissertation is to apply three different perspectives on the issue of fertility treatment to gain a solid understanding of patients' situations and the influencing factors on their well-being. The findings are intended to serve as a basis future research in this regard, and three ways to extend them are imaginable.

First, future research could continue with the same perspectives, but deepen the insights. For the "patient journey" perspective, for instance, a longitudinal study following a constant group of patients over the course of treatment may yield more resilient results. The same approach would be interesting for the investigation of coping strategies, as it would enable the coping strategies to be assessed with regard to their effectiveness in reducing distress. In regard to the perception of fertility treatment as a conversational taboo, this research examined only one way of contributing to its de-tabooing, namely blogging about the topic on social media. Other channels, such as traditional media, where a rising interest in this topic can also be sensed, remain untouched and represent an opportunity for future research.

Second, future research could explore a perspective neglected in this dissertation. While the focus of this work is on the patient journey, the uncertainty of the treatment outcome, and the perception of infertility as a taboo topic, another paper concentrated on infertility patients' unique ability to persist after multiple failures (Fischer, Otnes, and Tuncay 2007). This suggests that the characterization of fertility treatment in this dissertation might not consider all its facets and that additional perspectives might be worth investigating.

Third, future research may change the subjects of research. In all three articles, the focus was on the primary target group of fertility clinics: infertile heterosexual couples. However, both fertile and homosexual couples also deserve attention in this regard. Although the percentage of patients undergoing treatment for social reasons (e.g., if a women has no male partner) and homosexual patients is still relatively low in Germany (0.6% and 1%, respectively, in 2020; Barnitzky et al. 2021), it can be assumed that it will rise in the coming years. As their starting conditions differ largely from those of infertile patients, their concerns and needs may also differ. Moreover, the male perspective on fertility treatment was largely neglected in this dissertation (with the exception of Paper 1). Future research could compare male and female coping strategies and how they deal with the conversational taboo.

References

Agostini, Francesca, Fiorella Monti, Leonardo de Pascalis, Marcella Paterlini, Giovanni B. La Sala, and Isaac Blickstein (2011), “Psychosocial Support for Infertile Couples During Assisted Reproductive Technology Treatment,” *Fertility and Sterility*, 95 (2), 707–10.

Al-Menayes, Jamal J. (2015), “Motivations for Using Social Media: An Exploratory Factor Analysis,” *International Journal of Psychological Studies*, 7 (1), 43–50.

Anderson, Laurel, Amy L. Ostrom, and Mary J. Bitner (2011), *Surrounded by Services: A New Lens for Examining the Influence of Services as Social Structures on Well-Being*.

Bagozzi, Richard P. and M. F. van Loo (1978), “Fertility as Consumption: Theories from the Behavioral Sciences,” *Journal of Consumer Research*, 4 (4), 199–228.

Balabanis, George and Elena Chatzopoulou (2019), “Under the Influence of a Blogger: The Role of Information-Seeking Goals and Issue Involvement,” *Psychology & Marketing*, 36 (4), 342–53.

Baram, David, Ellen Tourtelot, Eberhard Muechler, and Ko-En Huang (1988), “Psychosocial Adjustment Following Unsuccessful in Vitro Fertilization,” *Journal of Psychosomatic Obstetrics & Gynecology*, 9 (3), 181–90.

Barnitzky, S., V. Blumenaur, U. Czeromin, D. Fehr, C. Gnoth, C. Grewe, J. S. Krüssel, M. S. Kupka, A. Tandler-Schneider, and S. Tauchert (2021), “D·I·R Annual 2020 – the German IVF-Registry,” *Journal of Reproductive Medicine and Endocrinology*, 18 (5).

Beals, Kristin P., Letitia A. Peplau, and Shelly L. Gable (2009), “Stigma Management and Well-Being: The Role of Perceived Social Support, Emotional Processing, and Suppression,” *Personality & social psychology bulletin*, 35 (7), 867–79.

Berghuis, James P. and Annette L. Stanton (2002), “Adjustment to a Dyadic Stressor: A Longitudinal Study of Coping and Depressive Symptoms in Infertile Couples over an Insemination Attempt,” *Journal of Consulting and Clinical Psychology*, 70 (2), 433–8.

Berry, Leonard L., Deanna J. Attai, Debra L. Scammon, and Rana L. A. Awdish (2022), “When the Aims and the Ends of Health Care Misalign,” *Journal of Service Research*, 25 (1), 160–84.

Berry, Leonard L., Scott W. Davis, and Jody Wilmet (2015), “When the Customer Is Stressed,” *Harvard Business Review*, 93 (1), 86–94.

Blakemore, Jennifer K., Arielle H. Bayer, Meghan B. Smith, and James A. Grifo (2020), “Infertility Influencers: An Analysis of Information and Influence in the Fertility Webspace,” *Journal of Assisted Reproduction and Genetics*, 37 (6), 1371–8.

Blumenaur, Verona, Ute Czeromin, Daniel Fehr, Klaus Fiedler, Christian Gnoth, Jan S. Krüssel, Markus S. Kupka, Andreas Ott, and Andreas Tandler-Schneider (2018), “D.I.R-Annual 2017,” *Journal of Reproductive Medicine and Endocrinology*, 15 (5-6), 216–49.

Boivin, Jacky and Deborah Lancastle (2010), “Medical Waiting Periods: Imminence, Emotions and Coping,” *Women’s Health*, 6 (1), 59–69.

Boivin, Jacky and Janet E. Takefman (1996), “Impact of the in-Vitro Fertilization Process on Emotional, Physical and Relational Variables,” *Human Reproduction*, 11 (4), 903–7.

Bordley, Robert F. (2001), “Integrating Gap Analysis and Utility Theory in Service Research,” *Journal of Service Research*, 3 (4), 300–9.

Boshoff, Christo (2002), “Service Advertising: An Exploratory Study of Risk Perceptions,” *Journal of Service Research*, 4 (4), 290–8.

Brandes, Monique, J. O. M. van der Steen, S. B. Bokdam, C. J. C. M. Hamilton, Jan P. de Bruin, Nelen, Willianne L. D. M., and Jan A. M. Kremer (2009), “When and Why Do Subfertile Couples Discontinue Their Fertility Care? A Longitudinal Cohort Study in a Secondary Care Subfertility Population,” *Human reproduction*, 24 (12), 3127–35.

Buechel, Eva C. and Jonah Berger (2018), “Microblogging and the Value of Undirected Communication,” *Journal of Consumer Psychology*, 28 (1), 40–55.

Bughin, Jacques R. (2007), “How Companies Can Make the Most of User-Generated Content,” *The McKinsey Quarterly*.

Carroll, Patrick, Kate Sweeny, and James A. Shepperd (2006), “Forsaking Optimism,” *Review of General Psychology*, 10 (1), 56–73.

Carver, Charles S., Michael F. Scheier, and Jagdish K. Weintraub (1989), “Assessing Coping Strategies: A Theoretically Based Approach,” *Journal of Personality and Social Psychology*, 56 (2), 267–83.

Cobb, Sidney (1976), “Social Support as a Moderator of Life Stress,” *Psychosomatic Medicine*, 38 (5), 300–14.

Cockrill, Kate and Adina Nack (2013), ““I'm Not That Type of Person”: Managing the Stigma of Having an Abortion,” *Deviant Behavior*, 34 (12), 973–90.

Cosenza, Tracy R., Michael R. Solomon, and Wi-suk Kwon (2015), “Credibility in the Blogosphere: A Study of Measurement and Influence of Wine Blogs as an Information Source,” *Journal of Consumer Behaviour*, 14 (2), 71–91.

Cui, Geng, Wenjing Bao, and Tsang-Sing Chan (2009), “Consumers' Adoption of New Technology Products: The Role of Coping Strategies,” *Journal of Consumer Marketing*, 26 (2), 110–20.

Dale, J. R., S. M. Williams, and V. Bowyer (2012), “What Is the Effect of Peer Support on Diabetes Outcomes in Adults? A Systematic Review,” *Diabetic Medicine*, 29 (11), 1361–77.

Dickey, Richard P. and Peter R. Brinsden (2010), “Female Causes of Infertility: Evaluation and Treatment,” in *Manual of Intrauterine Insemination and Ovulation Induction*, Richard P. Dickey, Peter R. Brinsden, and Roman Pyrzak, eds. Cambridge, New York: Cambridge University Press, 19–30.

Duhachek, Adam (2005), “Coping: A Multidimensional, Hierarchical Framework of Responses to Stressful Consumption Episodes,” *Journal of Consumer Research*, 32 (1), 41–53.

Ellsberg, Daniel (1961), “Risk, Ambiguity, and the Savage Axioms,” *The Quarterly Journal of Economics*, 75 (4), 643–69.

ESHRE (2017), *A Policy Audit on Infertility: Analysis of 9 EU Countries*.

Etner, Johanna, Meglena Jeleva, and Jean-Marc Tallon (2012), “Decision Theory Under Ambiguity,” *Journal of Economic Surveys*, 26 (2), 234–70.

Femtech Analytics (2021), *FemTech Industry 2021 / Q2 Landscape Overview*. London.

Field, Joy M., Darima Fotheringham, Mahesh Subramony, Anders Gustafsson, Amy L. Ostrom, Katherine N. Lemon, Ming-Hui Huang, and Janet R. McColl-Kennedy (2021), “Service Research Priorities: Designing Sustainable Service Ecosystems,” *Journal of Service Research*, 24 (4), 462–79.

Fischer, Eileen, Cele C. Otnes, and Linda Tuncay (2007), “Pursuing Parenthood: Integrating Cultural and Cognitive Perspectives on Persistent Goal Striving,” *Journal of Consumer Research*, 34 (4), 425–40.

Folkman, Susan and Richard S. Lazarus (1980), “An Analysis of Coping in a Middle-Aged Community Sample,” *Journal of Health and Social Behavior*, 21 (3), 219–39.

Frattaroli, Joanne (2006), “Experimental Disclosure and Its Moderators: A Meta-Analysis,” *Psychological Bulletin*, 132 (6), 823–65.

Gabbott, Mark, Yelena Tsarenko, and Wai H. Mok (2011), “Emotional Intelligence as a Moderator of Coping Strategies and Service Outcomes in Circumstances of Service Failure,” *Journal of Service Research*, 14 (2), 234–48.

Gameiro, S., J. Boivin, E. Dancet, C. de Klerk, M. Emery, C. Lewis-Jones, P. Thorn, U. van den Broeck, C. Venetis, C. M. Verhaak, T. Wischmann, and N. Vermeulen (2015), “ESHRE Guideline: Routine Psychosocial Care in Infertility and Medically Assisted Reproduction—A Guide for Fertility Staff,” *Human Reproduction*, 30 (11), 2476–85.

Gameiro, S., J. Boivin, L. Peronace, and C. M. Verhaak (2012), “Why Do Patients Discontinue Fertility Treatment? A Systematic Review of Reasons and Predictors of Discontinuation in Fertility Treatment,” *Human Reproduction Update*, 18 (6), 652–69.

Gelbrich, Katja (2010), “Anger, Frustration, and Helplessness After Service Failure: Coping Strategies and Effective Informational Support,” *Journal of the Academy of Marketing Science*, 38 (5), 567–85.

Gezinski, Lindsay B., Sharvari Karandikar, Alexis Levitt, and Roxanne Ghaffarian (2017), ““We Want to Offer You Peace of Mind”: Marketing of Transnational Commercial Surrogacy Services to Intended Parents,” *Health Marketing Quarterly*, 34 (4), 302–14.

Glaser, Barney G. and Anselm L. Strauss (2017), *The Discovery of Grounded Theory*. London: Routledge.

Gollnhofer, Johanna (2015), “Taste the Waste–Constructing New Moralities Through Taboo Consumption,” *ACR North American Advances*, 43, 542.

Guerrero, Laura K., Peter A. Andersen, Peter F. Jorgensen, Brian H. Spitzberg, and Sylvie V. Eloy (1995), “Coping with the Green-eyed Monster: Conceptualizing and Measuring Communicative Responses to Romantic Jealousy,” *Western Journal of Communication*, 59 (4), 270–304.

Gurkan, Levent, Ashley B. Bowen, and Wayne J. G. Hellstrom (2010), “Male Causes of Infertility: Evaluation and Treatment,” in *Manual of Intrauterine Insemination and Ovulation Induction*, Richard P. Dickey, Peter R. Brinsden, and Roman Pyrzak, eds. Cambridge, New York: Cambridge University Press, 7–18.

Gurrieri, Lauren and Jenna Drenten (2019), “Visual Storytelling and Vulnerable Health Care Consumers: Normalising Practices and Social Support Through Instagram,” *Journal of Services Marketing*, 33 (6), 702–20.

Hamby, Anne and Tom van Laer (2022), “Not Whodunit but Whydunit: Story Characters’ Motivations Influence Audience Interest in Services,” *Journal of Service Research*, 25 (1), 48–65.

Hanna, Esmée and Brendan Gough (2016), “Emoting Infertility Online: A Qualitative Analysis of Men's Forum Posts,” *Health*, 20 (4), 363–82.

Harmeling, Colleen M., Martin Mende, Maura L. Scott, and Robert W. Palmatier (2021), “Marketing, Through the Eyes of the Stigmatized,” *Journal of Marketing Research*, 58 (2), 223–45.

Hassan, Louise, Deirdre Shaw, Edward Shiu, Gianfranco Walsh, and Sara Parry (2013), “Uncertainty in Ethical Consumer Choice: A Conceptual Model,” *Journal of Consumer Behaviour*, 12 (3), 182–93.

Hennig-Thurau, Thorsten, Kevin P. Gwinner, Gianfranco Walsh, and Dwayne D. Gremler (2004), “Electronic Word-of-Mouth via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet?,” *Journal of Interactive Marketing*, 18 (1), 38–52.

Hewer, Paul and Douglas Brownlie (2007), “Cultures of Consumption of Car Aficionados,” *International Journal of Sociology and Social Policy*, 27 (3/4), 106–19.

Hinton, Lisa, Jennifer J. Kurinczuk, and Sue Ziebland (2010), “Infertility; Isolation and the Internet: A Qualitative Interview Study,” *Patient education and counseling*, 81 (3), 436–41.

Hirschman, Elizabeth (1991), “Babies for Sale: Market Ethics and the New Reproductive Technologies,” *Journal of Consumer Affairs*, 25 (2), 358–90.

Holter, H., L. Anderheim, C. Bergh, and A. Möller (2006), “First IVF Treatment--Short-Term Impact on Psychological Well-Being and the Marital Relationship,” *Human reproduction (Oxford, England)*, 21 (12), 3295–302.

House, James S. (1981), *Work Stress and Social Support*. Reading, Mass.: Addison-Wesley.

Johnson, Bethany, Margaret M. Quinlan, and Nathan Pope (2019), “#ttc on Instagram: A Multimodal Discourse Analysis of the Treatment Experience of Patients Pursuing in Vitro Fertilization,” *Qualitative Research in Medicine and Healthcare*, 3 (1).

Kahlor, LeeAnn and Michael Mackert (2009), “Perceptions of Infertility Information and Support Sources Among Female Patients Who Access the Internet,” *Fertility and Sterility*, 91 (1), 83–90.

Kaliarnta, Sofia, Jessica Nihlén-Fahlquist, and Sabine Roeser (2011), “Emotions and Ethical Considerations of Women Undergoing IVF-Treatments,” *HEC Forum*, 23 (4), 281–93.

Kaplan, Edward H., Avner Hershlag, Alan H. DeCherney, and Gady Lavy (1992), “To Be or Not to Be? That Is Conception! Managing in Vitro Fertilization Programs,” *Management Science*, 38 (9), 1217–29.

Kato, Tsukasa (2015), “Frequently Used Coping Scales: A Meta-Analysis,” *Stress and health journal of the International Society for the Investigation of Stress*, 31 (4), 315–23.

Keck, Christoph and Michael Alper (2005), “Marketing Strategy — Quality Management as a Marketing Tool in Reproductive Medicine,” *Journal of Medical Marketing*, 5 (4), 303–8.

———— (2006), “Staff Development: A Management Task in IVF Centres,” *Journal of Medical Marketing*, 6 (1), 49–56.

Kelly-Hedrick, Margot, Paul H. Grunberg, Felicia Brochu, and Phyllis Zelkowitz (2018), “"It's Totally Okay to Be Sad, but Never Lose Hope": Content Analysis of Infertility-Related Videos on YouTube in Relation to Viewer Preferences,” *Journal of medical Internet research*, 20 (5).

Kim, Jung-Hyun, Robert Larose, and Wei Peng (2009), “Loneliness as the Cause and the Effect of Problematic Internet Use: The Relationship Between Internet Use and Psychological Well-Being,” *CyberPsychology & Behavior*, 12 (4), 451–5.

Kozinets, Robert V. (2002), “The Field Behind the Screen: Using Netnography for Marketing Research in Online Communities,” *Journal of Marketing Research*, 39 (1), 61–72.

——— (2011), *Netnography: Doing Ethnographic Research Online*, Reprinted. Los Angeles, Calif.: Sage.

Lancastle, Deborah and Jacky Boivin (2008), “A Feasibility Study of a Brief Coping Intervention (PRCI) For the Waiting Period Before a Pregnancy Test During Fertility Treatment,” *Human Reproduction*, 23 (10), 2299–307.

Langer, Roy and Suzanne C. Beckman (2005), “Sensitive Research Topics: Netnography Revisited,” *Qualitative Market Research: An International Journal*, 8 (2), 189–203.

Langford, C. P., J. Bowsher, J. P. Maloney, and P. P. Lillis (1997), “Social Support: A Conceptual Analysis,” *Journal of advanced nursing*, 25 (1), 95–100.

Larsen, Gretchen and Maurice Patterson (2018), “Consumption, Marketing and Taboo,” *Journal of Marketing Management*, 34 (13-14), 1063–6.

Larsen, Gretchen, Maurice Patterson, Ouidade Sabri, and Luciana Walther (2018), “A Commentary on the Treatment of Taboo in Consumption and Marketing,” *Journal of Marketing Management*, 34 (13-14), 1067–77.

Lee, Mihan (2017), “Don't Give up! A Cyber-Ethnography and Discourse Analysis of an Online Infertility Patient Forum,” *Culture, medicine and psychiatry*, 41 (3), 341–67.

Lee, Yih H. and Cheng Qiu (2009), “When Uncertainty Brings Pleasure: The Role of Prospect Imageability and Mental Imagery,” *Journal of Consumer Research*, 36 (4), 624–33.

Lipshitz, Raanan and Orna Strauss (1997), “Coping with Uncertainty: A Naturalistic Decision-Making Analysis,” *Organizational Behavior and Human Decision Processes*, 69 (2), 149–63.

Lytle, Richard S. and Michael P. Mokwa (1992), “Evaluating Health Care Quality: The Moderating Role of Outcomes,” *Journal of Health Care Marketing*, 12 (1), 14–44.

Lyubomirsky, Sonja and Susan Nolen-Hoeksema (1995), “Effects of Self-Focused Rumination on Negative Thinking and Interpersonal Problem Solving,” *Journal of Personality and Social Psychology*, 69 (1), 176–90.

Malik, Sumaira H. and Neil S. Coulson (2008), "Computer-Mediated Infertility Support Groups: An Exploratory Study of Online Experiences," *Patient education and counseling*, 73 (1), 105–13.

———— (2010), "Coping with Infertility Online: An Examination of Self-Help Mechanisms in an Online Infertility Support Group," *Patient education and counseling*, 81 (2), 315–8.

Martins, M. V., B. D. Peterson, V. Almeida, J. Mesquita-Guimarães, and M. E. Costa (2014), "Dyadic Dynamics of Perceived Social Support in Couples Facing Infertility," *Human reproduction (Oxford, England)*, 29 (1), 83–9.

Martins, Mariana V., Brennan D. Peterson, Patrício Costa, Maria E. Costa, Rikke Lund, and Lone Schmidt (2013), "Interactive Effects of Social Support and Disclosure on Fertility-Related Stress," *Journal of Social and Personal Relationships*, 30 (4), 371–88.

Matlin, Margaret W. and David J. Stang (1978), *The Pollyanna Principle: Selectivity in Language, Memory, and Thought*. Cambridge: Schenkman Publishing Company.

Maulana, Amalia E. and Giana M. Eckhardt (2007), "Just Friends, Good Acquaintances or Soul Mates? An Exploration of Web Site Connectedness," *Qualitative Market Research: An International Journal*, 10 (3), 227–42.

Mellers, Barbara A., Alan Schwartz, Katty Ho, and Ilana Ritov (1997), "Decision Affect Theory: Emotional Reactions to the Outcomes of Risky Options," *Psychological Science*, 8 (6), 423–9.

Meyer, Jan-Hinrich, Ko de Ruyter, Dhruv Grewal, Kathleen Cleeren, Debbie I. Keeling, and Scott Motyka (2020), "Categorical Versus Dimensional Thinking: Improving Anti-Stigma Campaigns by Matching Health Message Frames and Implicit Worldviews," *Journal of the Academy of Marketing Science*, 48 (2), 222–45.

Michelson, Grant and Rohan Miller (2019), "Taboos, Morality and Marketing: Towards a Conceptual Model and Illustration," *Journal of Consumer Marketing*, 36 (3), 393–400.

Morrow, Jannay and Susan Nolen-Hoeksema (1990), “Effects of Responses to Depression on the Remediation of Depressive Affect,” *Journal of Personality and Social Psychology*, 58 (3), 519–27.

Nadkarni, Ashwini and Stefan G. Hofmann (2012), “Why Do People Use Facebook?,” *Personality and Individual Differences*, 52 (3), 243–9.

Ostrom, Amy L., Joy M. Field, Darima Fotheringham, Mahesh Subramony, Anders Gustafsson, Katherine N. Lemon, Ming-Hui Huang, and Janet R. McColl-Kennedy (2021), “Service Research Priorities: Managing and Delivering Service in Turbulent Times,” *Journal of Service Research*, 24 (3), 329–53.

Ostrom, Amy L., A. Parasuraman, David E. Bowen, Lia Patricio, and Christopher A. Voss (2015), “Service Research Priorities in a Rapidly Changing Context,” *Journal of Service Research*, 18 (2), 127–59.

Parkinson, Joy, Lisa Schuster, and Rory Mulcahy (2022), “Online Third Places: Supporting Well-Being Through Identifying and Managing Unintended Consequences,” *Journal of Service Research*, 25 (1), 108–25.

Pera, Rebecca and Giampaolo Viglia (2016), “Exploring How Video Digital Storytelling Builds Relationship Experiences,” *Psychology & Marketing*, 33 (12), 1142–50.

Peterson, B. D., M. Pirritano, U. Christensen, and L. Schmidt (2008), “The Impact of Partner Coping in Couples Experiencing Infertility,” *Human Reproduction*, 23 (5), 1128–37.

Peterson, Brennan D., Camilla S. Sejbaek, Matthew Pirritano, and Lone Schmidt (2014), “Are Severe Depressive Symptoms Associated with Infertility-Related Distress in Individuals and Their Partners?,” *Human Reproduction*, 29 (1), 76–82.

Pex (2019), “Distribution of Total YouTube Video Content Worldwide as of December 2018 by Category,” [available at https://www.statista.com/statistics/1026914/global-distribution-youtube-video-content-by-category/].

Piha, Samuel, Leila Hurmerinta, Birgitta Sandberg, and Elina Järvinen (2018), “From Filthy to Healthy and Beyond: Finding the Boundaries of Taboo Destruction in Sex Toy Buying,” *Journal of Marketing Management*, 34 (13-14), 1078–104.

Poynor, C. (2010), “Social Comparison and Negative Emotions: Understanding Regret, Envy, and Schadenfreude in a Consumer World,” *NA - Advances in Consumer Research*, 37, 195–8.

Price, Linda L., Eric J. Arnould, and Patrick Tierney (1995), “Going to Extremes: Managing Service Encounters and Assessing Provider Performance,” *Journal of Marketing*, 59, 83–97.

Rachman, S. (1980), “Emotional Processing,” *Behaviour Research and Therapy*, 18 (1), 51–60.

Read, Suzanne C., Marie-Eve Carrier, Marie-Eve Boucher, Robert Whitley, Sharon Bond, and Phyllis Zelkowitz (2014), “Psychosocial Services for Couples in Infertility Treatment: What Do Couples Really Want?,” *Patient education and counseling*, 94 (3), 390–5, [available at http://www.sciencedirect.com/science/article/pii/S0738399113004667].

Reis, Salomé, Maria R. Xavier, Rui Coelho, and Nuno Montenegro (2013), “Psychological Impact of Single and Multiple Courses of Assisted Reproductive Treatments in Couples: A Comparative Study,” *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 171 (1), 61–6, [available at http://dx.doi.org/10.1016/j.ejogrb.2013.07.034].

Richard, Jeremie, Icoquih Badillo-Amberg, and Phyllis Zelkowitz (2017), “"So Much of This Story Could Be Me": Men's Use of Support in Online Infertility Discussion Boards,” *American journal of men's health*, 11 (3), 663–73.

Riegner, Cate (2007), “Word of Mouth on the Web: The Impact of Web 2.0 on Consumer Purchase Decisions,” *Journal of Advertising Research*, 47 (4), 436–47.

Robertson, Nichola, Yelena Tsarenko, Michael J. Polonsky, and Lisa McQuilken (2021), "Vulnerability in in-Vitro Fertilisation Transformative Services: An Interplay of Individual and Institutional Factors," *Journal of Services Marketing*, 35 (6), 706–21.

Sabri, Ouidade (2012), "Taboo Advertising: Can Humor Help to Attract Attention and Enhance Recall?," *Journal of Marketing Theory and Practice*, 20 (4), 407–22.

Sabri, Ouidade, Delphine Manceau, and Bernard Pras (2010), "Taboo: An Underexplored Concept in Marketing," *Recherche et Applications en Marketing (English Edition)*, 25 (1), 59–85.

Sandikci, Özlem and Güliz Ger (2010), "Veiling in Style: How Does a Stigmatized Practice Become Fashionable?," *Journal of Consumer Research*, 37 (1), 15–36.

Schmidt, L., B. E. Holstein, U. Christensen, and J. Boivin (2005), "Communication and Coping as Predictors of Fertility Problem Stress: Cohort Study of 816 Participants Who Did Not Achieve a Delivery After 12 Months of Fertility Treatment," *Human reproduction*, 20 (11), 3248–56.

Schmittlein, David C. and Donald G. Morrison (2003), "A Live Baby or Your Money Back: The Marketing of in Vitro Fertilization Procedures," *Management Science*, 49 (12), 1617–35.

Sibicky, Mark and John F. Dovidio (1986), "Stigma of Psychological Therapy: Stereotypes, Interpersonal Reactions, and the Self-Fulfilling Prophecy," *Journal of Counseling Psychology*, 33 (2), 148–54.

Slade, P., C. O'Neill, A. J. Simpson, and H. Lashen (2007), "The Relationship Between Perceived Stigma, Disclosure Patterns, Support and Distress in New Attendees at an Infertility Clinic," *Human Reproduction*, 22 (8), 2309–17.

Stanton, Annette L. (1991), "Cognitive Appraisals, Coping Processes, and Adjustment to Infertility," in *Infertility: Perspectives from Stress and Coping Research*, Annette L. Stanton and Christine Dunkel-Schetter, eds. Boston, MA: Springer, 87–108.

Strizhakova, Yuliya, Yelena Tsarenko, and Julie A. Ruth (2012), "“I’m Mad and I Can’t Get That Service Failure Off My Mind” Coping and Rumination as Mediators of Anger Effects on Customer Intentions," *Journal of Service Research*, 15 (4), 414–29.

Sun, Jin, Hean T. Keh, and Angela Y. Lee (2012), “The Effect of Attribute Alignability on Service Evaluation: The Moderating Role of Uncertainty,” *Journal of Consumer Research*, 39 (4), 831–47.

Sweeny, Kate (2012), “Waiting Well: Tips for Navigating Painful Uncertainty,” *Social and Personality Psychology Compass*, 6 (3), 258–69.

Sweeny, Kate and Sara E. Andrews (2014), “Mapping Individual Differences in the Experience of a Waiting Period,” *Journal of Personality and Social Psychology*, 106 (6), 1015–30.

Sweeny, Kate, Sara E. Andrews, S. K. Nelson, and Megan L. Robbins (2015), “Waiting for a Baby: Navigating Uncertainty in Recollections of Trying to Conceive,” *Social science & medicine (1982)*, 141, 123–32.

Sweeny, Kate and Arezou G. Cavanaugh (2012), “Waiting Is the Hardest Part: A Model of Uncertainty Navigation in the Context of Health News,” *Health Psychology Review*, 6 (2), 147–64.

Sweeny, Kate and Angelica Falkenstein (2015), “Is Waiting the Hardest Part? Comparing the Emotional Experiences of Awaiting and Receiving Bad News,” *Personality and Social Psychology Bulletin*, 41 (11), 1551–9.

Sweeny, Kate, Chandra A. Reynolds, Angelica Falkenstein, Sara E. Andrews, and Michael D. Dooley (2016), “Two Definitions of Waiting Well,” *Emotion*, 16 (1), 129–43.

Sweeny, Kate and James A. Shepperd (2007), “Do People Brace Sensibly? Risk Judgments and Event Likelihood,” *Personality and Social Psychology Bulletin*, 33 (8), 1064–75.

Takhar, Jennifer (2021), “IVF Survivorship, the IVF Memoir and Reproductive Activism,” *Journal of Marketing Management*, 1–13.

Takhar, Jennifer and H. R. Houston (2021), "Forty Years of Assisted Reproductive Technologies (ARTs): The Evolution of a Marketplace Icon," *Consumption Markets & Culture*, 24 (5), 468–78.

Takhar, Jennifer and Kelly Pemberton (2019), "Reproducing "Rhetrickery" in Online Fertility Marketing: Harnessing the "Rhetoric of the Possible"," *Consumption Markets & Culture*, 22 (4), 314–36.

Tamres, Lisa K., Denise Janicki, and Vicki S. Helgeson (2002), "Sex Differences in Coping Behavior: A Meta-Analytic Review and an Examination of Relative Coping," *Personality and Social Psychology Review*, 6 (1), 2–30.

The ESHRE Capri Workshop Group (2009), "Intrauterine Insemination," *Human Reproduction Update*, 15 (3), 265–77.

Toubia, Olivier and Andrew T. Stephen (2013), "Intrinsic Vs. Image-Related Utility in Social Media: Why Do People Contribute Content to Twitter?," *Marketing Science*, 32 (3), 368–92.

Tuil, Wouter S., Martine van Selm, Chris M. Verhaak, Pieter F. de Vries Robbé, and Jan A. M. Kremer (2009), "Dynamics of Internet Usage During the Stages of in Vitro Fertilization," *Fertility and Sterility*, 91 (3), 953–6.

Tuil, Wouter S., Chris M. Verhaak, Didi D. M. Braat, Pieter F. de Vries Robbé, and Jan A. M. Kremer (2007), "Empowering Patients Undergoing in Vitro Fertilization by Providing Internet Access to Medical Data," *Fertility and Sterility*, 88 (2), 361–8.

Valerius, Karyn (1997), "Genetic Essentialism: Race, Class and the Politics of Reproduction," *Consumption, Markets and Culture*, 1 (3), 229–47.

van den Broeck, Uschi, Thomas D'Hooghe, Paul Enzlin, and Koen Demyttenaere (2010), "Predictors of Psychological Distress in Patients Starting IVF Treatment: Infertility-Specific Versus General Psychological Characteristics," *Human Reproduction*, 25 (6), 1471–80.

Veer, Ekant and Maja Golf-Papez (2018), “Physically Freeing: Breaking Taboos Through Online Displays of the Sexual Self,” *Journal of Marketing Management*, 34 (13-14), 1105–25.

Verhaak, C. M., J. M. J. Smeenk, A. W. M. Evers, J. A. M. Kremer, F. W. Kraaimaat, and D. D. M. Braat (2007), “Women's Emotional Adjustment to IVF: A Systematic Review of 25 Years of Research,” *Human reproduction update*, 13 (1), 27–36.

Verhaak, C. M., J. M. J. Smeenk, A. van Minnen, J. A. M. Kremer, and F. W. Kraaimaat (2005), “A Longitudinal, Prospective Study on Emotional Adjustment Before, During and After Consecutive Fertility Treatment Cycles,” *Human reproduction (Oxford, England)*, 20 (8), 2253–60.

Whiteford, Linda M. and Lois Gonzalez (1995), “Stigma: The Hidden Burden of Infertility,” *Social Science & Medicine*, 40 (1), 27–36.

WHO Scientific Group (1992), *Recent Advances in Medically Assisted Conception*. Geneva, Switzerland.

Wilson, Aubrey and Christopher West (1981), “The Marketing of 'Unmentionables',” *Harvard Business Review*, 59 (1), 91–102.

Wilson, Timothy D., David B. Centerbar, Deborah A. Kermer, and Daniel T. Gilbert (2005), “The Pleasures of Uncertainty: Prolonging Positive Moods in Ways People Do Not Anticipate,” *Journal of Personality and Social Psychology*, 88 (1), 5–21.

Wingert, Susan, Carol D. H. Harvey, Karen A. Duncan, and Ruth E. Berry (2005), “Assessing the Needs of Assisted Reproductive Technology Users of an Online Bulletin Board,” *International Journal of Consumer Studies*, 29 (5), 468–78.

Woodside, Arch G., Suresh Sood, and Kenneth E. Miller (2008), “When Consumers and Brands Talk: Storytelling Theory and Research in Psychology and Marketing,” *Psychology & Marketing*, 25 (2), 97–145.

Wrobel, Ursula (2002), "“Not in Front of Your Mother!”: Online Marketing for Pharmaceutical Products Addressing Taboo Topics," *Qualitative Market Research: An International Journal*, 5 (1), 19–27.

Wrosch, C., M. F. Scheier, G. E. Miller, R. Schulz, and C. S. Carver (2003), "Adaptive Self-Regulation of Unattainable Goals: Goal Disengagement, Goal Reengagement, and Subjective Well-Being," *Personality and Social Psychology Bulletin*, 29 (12), 1494–508.

Yalkin, Cagri and Ekant Veer (2018), "Taboo on TV: Gender, Religion, and Sexual Taboos in Transnationally Marketed Turkish Soap Operas," *Journal of Marketing Management*, 34 (13-14), 1149–71.

Yi, S. and H. Baumgartner (2004), "Coping with Negative Emotions in Purchase-Related Situations," *Journal of Consumer Psychology*, 14 (3), 303–17.

Youtube (2022), "YouTube for Press," [available at https://blog.youtube/press/].

Zayer, Linda T., Cele C. Otnes, and Eileen M. Fischer (2015), "The Nature and Implications of Consumers' Experiential Framings of Failure in High-Risk Service Contexts," *Journal of Service Research*, 18 (3), 303–17.

Zegers-Hochschild, F., G. D. Adamson, J. de Mouzon, O. Ishihara, R. Mansour, K. Nygren, E. Sullivan, and S. Vanderpoel (2009), "International Committee for Monitoring Assisted Reproductive Technology (ICMART) And the World Health Organization (WHO) Revised Glossary of ART Terminology, 2009," *Fertility and Sterility*, 92 (5), 1520–4.