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*Effect of Figurative Language on Opinion Formation and Decision-
Making in the Case of Surrogacy*

presented by
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Manuscript 1

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Manuscript 2

Mohnke, M., Christmann, U., Roos, Y., & Thomale, C. (2022). Do metaphors make opinions? An empirical study on the effect of metaphorical framing on the opinion on surrogacy. *Metaphor and the Social World*, 12(1), 92-114.

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Mohnke, M., Roos, Y., & Christmann, U., (in press). Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict? An Empirical Study on the Case of Surrogates. *Psychology of Language and Communication*.

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1 Introduction

In my dissertation, I studied whether different metaphorical expressions for surrogacy can operate as frames and thereby influence people's opinion and decision-making on the subject of surrogacy. My literature review will demonstrate that metaphors can be used as frames to influence the opinion of people about several topics. The results of one study I conducted suggest that metaphorical words for surrogacy can influence people's opinion about surrogacy. The results of another study I conducted suggest that metaphorical words for surrogacy can influence people's decision-making in a fictional lawsuit in a case about surrogacy. Therefore, my dissertation will show that different metaphorical expressions make a difference on how the topic of surrogacy is perceived.

Starting with Aristotle's comparison view, scholars have long debated the mechanisms of metaphors. In metaphorical language, a word or phrase from one semantic field is substituted with a word or phrase from another. Metaphors enable people to see one concept in term of another concept. A more recent linguistic concept is described by the term of framing. Framing was coined by Entman (1993) and originally described non-metaphorical language, which could influence people's attitude, by highlighting specific aspects of a topic. With the growing research on frames, researchers began to integrate knowledge from theories about framing with the knowledge from theories about metaphors and the term "metaphorical framing" was coined (Robins & Mayer, 2000). Compared to the relatively broad metaphor definition, metaphor framing is usually used in a narrower sense: it refers to the intentional use of metaphors as frames to guide interpretation. Earlier research on the effect of metaphors on thinking and problem solving exists, too. It is supposed to have the same effect as assumed by metaphor framing research – without using

the label “framing”, but sometimes using the label “schema” instead (e.g., Allbritton et al., 1995).

The effect of metaphorical framing is particularly relevant when new topics are discussed – especially when a topic is controversially discussed – because metaphorical frames can be used to influence people’s opinion on topics. In this line, surrogacy might be a topic for which metaphorical frames have an influence: Surrogacy is a topic most people know little about and it is controversially discussed. In Germany, several metaphorical terms for surrogacy exist. Even though surrogacy is illegal in Germany, the medial attention towards it has increased in the last years and it might make a difference which one of the German terms for surrogacy is used. Although varying the words for surrogacy involves only the change of a single word, studies found that in a text, minimal metaphorical changes on a word level can already work as frames to influence peoples’ opinions (e.g., Christmann & Göhring, 2016; Elmore & Luna-Lucero, 2017; Schnepf & Christmann, 2022; Thibodeau & Boroditsky, 2011). This is possible because the text is interpreted in the light of the metaphor. In this sense, the metaphor works like a guide for comprehending the text by providing associations about the topic at hand.

Against this background, the aim of my dissertation is to assess whether different metaphorical frames for surrogacy can influence people in their perception of surrogacy and the surrogate. More specifically, first, I aimed to find out whether the opinion of participants towards surrogacy could differ, depending on what metaphorical frame for the surrogate I used. Second, I aimed to find out whether decisions of participants regarding several matters of a surrogate mother at court could be influenced by the metaphorical frames in a mock trial.

A surrogate is defined as a person with an uterus who carries out a baby for another couple or person. Genetically, the egg could be a donor egg, could be from the intended mother or could even be from the surrogate herself, even though the latter is often forbidden. The sperm could be a donor sperm or from the intended father. In Germany, surrogacy is currently illegal. However, nonetheless there are German children who were carried out by a surrogate, as some German couples evade to other countries to pursue surrogacy. Probably due to its illegal nature, in Germany, most people know little about surrogacy and surrogates and there has hardly been any political discussion yet. This leads to both ill-informed decisions of intended parents as well as prejudices and misconceptions about surrogates. The working condition of surrogates vary between countries and a lot of information about surrogacy comes from companies with fluctuating and sometimes difficult working conditions for surrogates. This demonstrates the need to make surrogacy an openly-discussed political topic, while considering what influences our opinions, as well as political and medical decisions concerning surrogacy.

In Germany, surrogacy has various names. Firstly, the most commonly one used is “Leihmutterschaft”, which can literally be translated as “motherhood to lend”. It is mostly used by laypeople and in media. Secondly, “Mietmutterschaft”, which can literally be translated as “motherhood to rent”. The term is less common than “Leihmutterschaft” but is suggested by Thomale (2015) as the more legitimate one. Thirdly, “Ersatzmutterschaft”, which can be literally translated as “substitute motherhood”. This term for surrogacy is officially used in Germany, for example in legal guidelines (e.g., §13a AdVermiG; Ersatzmutter).

The terms for surrogacy mostly differ with regard to its monetary aspect: “To lend”, as in “Leihmutterschaft”, is usually referred to as providing something for a specific amount

of time without monetary compensation. In contrast, “to rent” as in “Mietmutterschaft” is understood as providing a product or a service for a specific amount of time against monetary compensation. The term “substitute” as in “Ersatzmutterschaft” is least connected to any monetary aspect and can be conceived as the most neutral one with regard to payment.

Those terms for surrogacy can be regarded as metaphoric because some aspects from one area (rent and lend), are conveyed onto the structure of another area (mother) where they serve as an interpretation strategy (see interaction theory of metaphor: Black, 1979; Richards, 1936). An unfamiliar angle of “motherhood” is emphasized by these metaphoric terms, namely motherhood as something to rent or to borrow. The influence of metaphorical terms is guided by the aspect of a topic they highlight or by the interpretation of a topic they offer. For surrogacy, this means that depending on the term used, different aspects of surrogacy could be activated in peoples mind, influencing their opinion towards surrogacy. Worldwide, surrogacy needs more discussion, which becomes obvious when considering how much laws and regulations concerning surrogacy differ between countries. In Germany, looking at the influence of the different terms currently used might be one first important step to understand what influences our opinions and our understanding of surrogacy. To date, the effect of the different terms for surrogacy on the opinion have never empirically been investigated. My thesis sets out to answer the question: “Can different metaphorical terms for surrogacy influence the opinion and decision-making of people regarding the topic of surrogacy?”

The structure of the thesis is as follows: Firstly, the topic of surrogacy and the legal situation in Germany will be introduced shortly. This will be complemented by manuscript 1, in which a questionnaire on the opinion of surrogacy was developed and can be used for

further research. Secondly, theories about the mechanism of metaphors, frames and metaphorical frames will be described. Thereafter, the current research on the influence of metaphors on opinion will be reviewed, with a main focus on research in the field of politics and law. In this section, the main results of manuscript 2 will be introduced, which analyses the influence of metaphorical frames on participants' opinion about surrogacy. Following, the impact of metaphors on decision-making in the field of law will be presented. In this section, the main results of manuscript 3 will be introduced, which deals with the influence of metaphorical frames on decision-making in a legal context in the case of a surrogate. The three manuscripts will be attached to this thesis and will provide more detailed information about the topics. Lastly, the main theoretical contributions of my thesis will be summarized. In this section I will answer the main question of my thesis: "Do different metaphorical frames for "surrogate mother" influence the opinion towards surrogates and how is that relevant in the field of law?" Moreover, in the last chapter, I will discuss practical implications of my findings, as well as the limitations of my studies and will propose possibilities for further research.

2. Surrogacy

Surrogacy is a concept everybody has heard about; however, most people only have a vague idea of it. Surrogacy is not unknown in Germany, as some German couples try to bypass the German law and hire a surrogate in another country. Due to its illegal nature, however, this happens privately and sometimes in secret. In the past, surrogacy was hardly covered in the media and mainly when a scandal happens (e.g., the picture of babies conceived by surrogates in the Ukraine, who could not be picked up due to corona crisis and a year later, due to a war) or when a celebrity conceives a child through surrogacy. The medial attention has increased in the last years. However, the little media coverage in the

past probably explains some of the overall lack of information for most people. This can lead to dangerous misinformation, as some couples who are interested in surrogacy do not foresee the huge judicial and psychological obstacles they face, when trying to get the child to be recognized as their own: In German law, the mother of the child is the person who carried and conceived the child (regardless of whether or not she is genetically related to it).

2.1 The Legal Context of Surrogacy

The law concerning motherhood, as well as the laws concerning the legality of surrogacy, vary hugely between countries. In many countries, surrogacy is strictly forbidden. As mentioned above, this is the case for Germany, but also for France, Spain and other countries. In some countries, so called commercial surrogacy is forbidden, however, so called altruistic surrogacy, which means the surrogate does not get compensated for her work, is allowed. This is the case in the UK, the Netherlands, or Australia. Then there are countries in which commercial surrogacy is allowed for residents of the country only (e.g., Mexico, India) and lastly, in some countries, surrogacy is legal for everybody (Ukraine, Russia, some states of the US).

2.2 Research on Surrogacy

Up to this date, research on surrogacy is scarce in Germany and little is known about the public opinion on surrogacy. The German surveys which have been conducted about reproductive techniques contain little information about the various facets of the opinion on surrogacy (Schröder et al., 2004; Stöbel-Richter et al., 2009) and no validated German questionnaire about the opinion on surrogacy exists. In the same vein, outside of Germany, many studies which have been conducted on the opinion on surrogacy have covered a wider range of reproductive techniques and therefore contain little facets of surrogacy itself (Dunn et al., 1988; Genuis et al., 1993; Krishnan, 1994; Suzuki et al., 2006). However, outside of

Germany, some exceptions exist in which a validated questionnaire was applied (Chliaoutakis et al., 2002; Kian et al., 2014; Poote & van den Akker, 2008; Rahmani et al., 2014). Those latter studies, expert discussions and a pre-test constituted the base of my study (manuscript 1), in which I developed and validated the first German questionnaire about the opinion on surrogacy.

2.3 Developing a German Questionnaire about Surrogacy (Manuscript 1).

First, I formulated a pool of items, covering several facets of surrogacy. Thereafter I selected 16 items from the pool, which all were adapted from existing validated English questionnaires (Kian et al., 2014; Rahmani et al., 2014; Svanberg et al., 2003). In addition, after I brought information from the literature review and the expert discussions together, I created 13 items which supplemented the 16 other items. All of the items were analysed with regard to their fit to German law and to the cultural background of Germany and when necessary, items were adapted. In addition, the questions were checked for comprehensiveness in a pre-test and based on the results, the questionnaire was adapted. Finally, 29 questions concerning surrogacy existed.

553 participants were recruited online to complete the questionnaire. Participants' age ranged from 17 to 79 with a mean of 31.92 and a standard deviation of 8.63. Thereafter, with the data of the participants, I executed a Principal Component Analysis, which is the necessary statistical tool to create a validated questionnaire. A Principal Component Analysis (PCA) identifies relevant items and sorts them into categories, named "factors". For the PCA it is recommended to use the criteria Eigenvalue greater than 1, a factor loading greater than .70 and the scree plot. I applied both of the criteria to identify relevant factors for the questionnaire.

The results identified powerful 3 factors, which explain 71.34% of the variance and consist of 13 items. The 3 factors all had meaningful content, were internally consistent and covered 3 different topics. After considering the questions which fell under one category, I created names for the factors, depending on which topic the questions covered. The first one I named “attitude towards surrogacy in general”, the second one I named “attitude towards monetary compensation” and the third one I named “attitude towards surrogate mothers”. For the development of the questionnaire, I found it important to cover a wide range of topics concerning surrogacy. Therefore, the final questionnaire covered the following topics: general opinion towards surrogacy (e.g., “How much do you agree with the statement: The concept of surrogacy does not harm any ethical principles?”); opinion towards surrogate mothers; own intentions (e.g., “If me or my partner could not conceive a child on our own, I would consider surrogacy”); legal issues of surrogacy; and opinion towards monetary compensation of surrogate mothers. I named the questionnaire “Attitude Towards Surrogacy Questionnaire” (“Fragebogen Einstellung zu Leihmutterschaft”).

During my first study, when dealing with the topic surrogacy for the first time, the lack of information and public discussion became apparent. The literature review as well as the results of the study showed that the general public knows little about surrogacy and the topic seems of little interest in politics. This endangers surrogates as well as people who hire surrogates to carry a child. The most important step would be to gather more information from experts in the field, namely the surrogates themselves, by listening to their stories and to their estimation of what they need from politics to support them.

Another consequence of surrogacy being a marginal issue is that no official, validated questionnaire existed in Germany. The questionnaire I created is the first German one which is internally consistent, validated and adapted to be culturally fitting and appropriate. I hope

that this contributes to a better insight into the topic of surrogacy. Moreover, the questionnaire is a starting point for other studies to develop a deeper understanding of surrogacy and for both the field of politics and medicine to gain more information about a topic which is, until now, dealt with more in private lives than in the public.

The article about the “Attitude Towards Surrogacy Questionnaire” was published under the name “Development and Validation of an “Attitude toward Surrogacy Questionnaire” in a German Population” in the Journal of Reproductive Medicine and Endocrinology (Mohnke, Thomale, Roos, & Christmann, 2019).

2.4 Terms for Surrogacy in Germany

In Germany, several terms for surrogacy co-exist. First, “Leihmutter” or “Leihmutterschaft” is the most common German term. It is translated literally as “*mother to lend*”. This is the term lay people would usually use. Also, in media-coverage about surrogacy, this is the most common term used. Second, “Mietmutter” or “Mietmutterschaft” was suggested by Thomale (2015) and is translated literally as “*mother to rent*”. This term is seldom used by laypeople or the media. Third, “Ersatzmutter” or “Ersatzmutterschaft” is the official German term for surrogacy. It is literally translated as “*substitute mother*” and is used in legal drafts and guidelines (e.g., §13a AdVerMiG; Ersatzmutter). This term is seldom used by lay people, however, sometimes this term is used by the media.

Even though the terms co-exist, they express three different views about the concept of surrogacy. All three terms contain the word “mother”, but the words in front “lend”, “rent” and “substitute” differ, and might therefore convey different associations with regard to surrogate motherhood. This does not necessarily have to be the intention of the user of the term; however, research has shown that depending on the (metaphorical) term used for a concept, different associations and even emotions can be evoked in people. Therefore, it is

possible, that also concerning the concept of surrogacy, the three different terms metaphorically convey three different views and perceptions of the concept of surrogacy and by doing so, evoke different associations with surrogacy in people.

Regarding the semantic difference of the three frames, the main distinction is about money: "Rent" ("mieten") is mainly associated with paying money to use something (this can be both a product and a service) for a specific amount of time. "Lend" ("leihen") is mainly associated with using a product or a service ("lend a hand") without monetary compensation. Depending on the context, "lending" may also include monetary compensation (e.g., lending money from a bank). However, this is only true for colloquial language. The German law the interpretation is even stricter: "Leihe" has the meaning of a gratuitous contract, by which one party allows another the use of a chose free of charge (§ 598 BGB). The third term "substitute" ("Ersatz") is -out of the three metaphorical frames- least connected to any monetary aspects. This difference with regard to monetary compensation is one explanation why possibly, depending on the term used by the transmitter, surrogacy is perceived differently by the receiver.

The terms might not necessarily be recognized as metaphorical at first, however, when looking at the definition of a metaphor, they fit into the category of metaphors: metaphors can be defined as a linguistic device with the help of which one concept can be described in terms of another concept (Landau et al., 2014). However, the boundaries of what can be defined as a metaphor vary between theories and researchers. Therefore, in the next chapter, I will outline the concept of metaphors and metaphorical frames, describe popular theories on how metaphors are comprehended and will explain, how the three metaphorical frames fit into the existing theories.

3 Metaphors and Metaphorical Frames

3.1 What is a Metaphor?

In classical rhetoric, metaphors are understood as figures of speech in which a word from one semantic field is substituted with a word from another semantic field “to suggest a likeness or analogy between them” (Merriam Webster Online Dictionary). The literature on metaphors is immense, and so are the attempts to define a metaphor. There is no clear, explicit line between literal language and metaphors and in the literature no consensus on how broadly the concept of metaphors should be exists (Cacciari & Glucksberg, 1994; Groeben & Christmann, 2003). In the following I will introduce definitions of metaphors proposed by several researchers.

Major academic contributions to the understanding of the mechanisms of metaphors begin with the comparison view, which was Aristotle’s attempt to find a definition for metaphors. According to the comparison view, metaphors are seen as verbal substitutions, which lead to implicit comparisons (see Levin, 1982, for a discussion of Aristotle’s views). This traditional view of metaphor was enhanced in more recent times: in 1979 Black proposed the interaction view of metaphor (Black, 1979), which is partly based on the comparison view. Black defined a metaphor as an interaction between two concepts: the original topic and the imaging metaphor. Similarity between the two concepts is evoked through an interpretation process - which is led by culturally formed associations. According to the theory, similarities between the categories may have existed before the metaphor was coined, but in addition, in some cases, the metaphor created the similarity.

In psychology, one popular theory which arose from Black’s interaction view is the domain-interaction theory (Tourangeau & Sternberg, 1982). According to the domain-interaction theory three components of a metaphor exist: a source domain, a target domain,

and a mapping between the source and the target domain. Metaphor comprehension occurs by processing a concept from one domain in terms of a concept from another domain. The goal domain and the source domain interact and the cognitive structure of the source domain is transmitted onto the goal domain. To exemplify, looking at the *crime is a virus* metaphor, *virus* is the source domain, *crime* is the goal domain. The features of the goal domain were transformed and can now be seen in a new, unusual way. The handling of a *virus* (find the root, treating it) is mapped with the knowledge about *crime*. Similarities are highlighted, differences are hidden. Several studies analyzed and extended the theory. For example, Sternberg and Nigro (1983) argued that analogy – partial similarities between entities – plays a major role in metaphor comprehension. Moreover, Gentner and Clement (1988) emphasized that metaphor comprehension is much more complex than accounted for in previous metaphor models and argued that the source and target domains are each drawn from a broader conceptual domain in which several “higher order” elements have relations among themselves. All in all, the above-mentioned theoretical contributions have inspired and supplemented each other (Christmann & Scheele, 2001).

In addition to those theories from the psychological field, there is another huge research field on metaphor comprehension, which developed from the linguistic side and works with the term “conceptual metaphor”. Even though I mainly drew from the domain-interaction theory when theoretically underpinning my studies, I want to mention some of the linguistic metaphor research. Conceptual metaphor theories developed mainly around the linguist George Lakoff and his colleagues (Lakoff, 1987, 1993, 2014; Lakoff & Johnson, 1980; Lakoff & Turner, 1989). Conceptual metaphors are defined as clusters of cross-domain mappings in thought (Lakoff & Johnson, 1980). According to the conceptual metaphor theories metaphor comprehension requires the ability to draw detailed, metaphorical mental mappings of

complex conceptual domains (Lakoff, 1993; Lakoff & Johnson, 1980). In order to understand a metaphorical sentence, an interaction between the goal domain and the source domain has to take place: the goal domain will be structured by the source domain. Thereby, a neural activation helps to understand the metaphorical meaning.

To summarize: theories from psychology as well as from the linguistic field on the comprehension of metaphors exist and are constantly developing. These theories, even though from different fields and different researchers, do not necessarily compete, but rather show similarities (e.g., the theories agree that metaphors are comprehended through considering both similarities and dissimilarities between domains) and can complement each other. As a key definition one can say: A metaphor is a comparison between two concepts, for which the term “target” (the topic at hand) and the term “source” (the topic used to characterize the topic at hand) are common in psychology as well as cognitive linguistics. As always when there is immense literature on a topic, synonyms for the terms do exist (e.g., “topic” instead of “target”; “base” instead of “source”), but for comprehensibility I will stick with the key terms “target” and “source”. In my dissertation, I will use the definition of metaphors from the domain-interaction theory (Tourangeau & Sternberg, 1982) to theoretically underpin my studies. As mentioned above, this theory is a popular one from the field of psychology, which has managed to combine and further develop other theories. For my studies, the domain-interaction theory is able to provide a satisfying background explanation for my research hypotheses that different words for surrogacy can act as frames to influence attitudes. I will provide more details about this later this chapter (see section 3.3, surrogacy as a metaphor).

As metaphors enable people to see one concept in term of another concept, metaphors can break down complex topics and are therefore a popular tool to make topics easier for

people to understand. To exemplify, in the medical field many complex diagnoses are communicated with the help of metaphors. Cancer patients are told that their *hungry cells grow fast* and are encouraged to *fight to the bitter end*. Metaphors also emphasize specific points about a topic and make one perspective of a topic especially prominent. When patients are encouraged to *fight to the bitter end* doctors place power into patients' hands, mobilize their energy for a battle, but as Sontag and Broun (1977) stress, it can also enhance victim blaming when *the battler is lost*. By using a metaphor, we can set up a scene: cancer is the *killer* and patients are the *cancer victims*. By using a metaphor, we can guide interpretation of a topic: it is the patients' responsibility to *fight their disease*. By using a metaphor, we can establish meaning: with the patients' body being *under attack*, the *fightback* justifies a brutal treatment. This example shows that in addition to being able to explain a complex topic, metaphors can also guide the interpretation of given topic (Lakoff & Johnson, 2008). This aspect of metaphors has been given the term "metaphorical framing", which I will explain in more detail in the next section.

3.2 What are Metaphorical Frames?

The term framing originally described non-metaphorical language, which could influence people's attitude, by highlighting specific aspects of a topic. With the growing research on frames, researchers began to integrate knowledge from theories about framing with the knowledge from theories about metaphors and the term "metaphorical framing" was coined (Robins & Mayer, 2000).

The definition of framing originated with Entman (1993) and is still influenced by his theories. A frame is as a schema of interpretation. Framing is defined as embedding an issue into a specific narrative. Most often this is done intentionally to guide interpretation of the issue. Thus, Framing can make a certain information about a topic more salient (Entman,

1993). When the salience of a particular aspect increases, this aspect is emphasized, it is more notable and can more easily be remembered. Moreover, frames can prime specific values and conceal others. An example is the use of distinct, but logically equivalent, statements (e.g., a medical treatment can promise a 93% chance of cure or can warn against a 7% chance of dying). Depending on the frame used, it causes individuals to alter their perspective.

People build mental filters through cultural influences. Framing can activate these mental filters, or schemas of interpretation, through a specific choice of word. In the same way, metaphors can fulfil functions of framing, as emphasizing a specific aspect, a moral viewpoint, or providing a potential solution (Burgers et al., 2016; Entman, 1993; Semino et al., 2018). In 2000, Robins and Mayer first used the term “metaphor frames” to describe the phenomena that metaphors can operate as frames to provide a different viewpoint on a topic. Compared to the relatively broad metaphor definition, metaphor framing is usually used in a narrower sense: it refers to the intentional use of metaphors in order to influence subjects thinking, feeling, opinion making, and behaviour. To exemplify, trade between countries can metaphorically be framed as *trade is war* or as *trade is a two-way street*. Depending on the metaphorical frame used, the same topic (*trade*) can be seen from different perspectives (*fight* versus *cooperation*).

Metaphorical framing was found to elicit both cognitive as well as emotional processes (Kühne, 2013). Both the cognitive as well as the emotional processes can in turn influence the opinion of the people, as well as influence people’s decisions about how to resolve a dilemma (Robins & Mayer, 2000). When *trade* is metaphorically framed as *trade is war*, people favour protective measures in the form of tariffs for their country more often, than when *trade* is metaphorically framed as *trade is a two-way street*. This example

demonstrates that metaphorical frames are able to affect people's judgments on a topic and influences the way people solve problems (Robins & Mayer, 2000), because people adopt the line of reasoning as suggested by the metaphorical frame. Research on the effect of metaphorical frames on attitude and opinion will be dealt with in more detail in chapter 4.

3.3 Surrogacy as a Metaphor

As mentioned earlier, the three terms for surrogacy can be regarded as metaphorical frames. For my next study the hypothesis was that the structure of the domain *surrogacy* is reinterpreted by the metaphorical frame (*mother to rent*, *mother to lend*, *substitute mother*). According to the domain-interaction view (Tourangeau & Sternberg, 1982), different frames for surrogacy highlight different aspects about the topic. Therefore, depending on the frame used, different associations with the topic of surrogacy can occur. The three metaphorical frames for surrogacy mainly differ with regard to whether or not monetary compensation is implied by the frame. Therefore, the different frames for surrogacy will probably activate – in line with the domain-interaction view - different associations with money. I expected “*mother to lend*” (“Leihmutter”) to activate the frame of *lending*, which would involve returning something and being charge-free. Likewise, I expected “*mother to rent*” (“Mietmutter”) to activate the frame of *renting*, which would involve a monetary compensation. Moreover, *renting* is more official than *lending*. I expected the third frame for surrogate mother, “*substitute mother*” (“Ersatzmutter”) to activate a frame which suggests a *replacement*. With regard to money, this frame is the most neutral one and activates fewer associations than the other two. Concluding, the metaphorical frames propose three distinct perspectives on the same issue.

4 The Effect of Metaphorical Framing on Opinion-Formation

In the previous chapter, I explained why the German words for surrogacy can be seen as metaphoric and as such, built a frame for surrogacy. Each metaphorical frame sheds a different light on the topic. Therefore, I wanted to find out: do the different terms influence the way we view surrogacy? Do the different terms influence our interpretation of the topic and maybe our discussions about surrogacy? Will our opinion on surrogacy be different, depending on which metaphorical frame for surrogacy we use? In the following chapter, I will review previous research on the influence of metaphors on opinion. Thereafter, I will present the results of my second study, in which I assessed whether the metaphorical terms for surrogacy influenced participants' opinion on surrogacy.

4.1 Previous Research on the Influence of Metaphorical Frames on Opinion

A considerable amount of literature has been published on the effect of metaphorical frames on people's perceptions of situations. To exemplify, metaphorical expressions have been found to shape participants' view towards crime (Christmann & Göhring, 2016; Thibodeau & Boroditsky, 2011). In the studies, participants were asked to suggest solutions for criminality in a city. The crimes were either framed as a *beast* or a *virus*. And indeed, the different metaphorical frames for crime influenced participants' suggested solution: participants with the *virus* frame preferred reforms, while participants with the *beast* frame preferred the enforcement of measures. Another important study was conducted by Elmore and Luna-Lucero (2017). The authors compared the metaphorical frame of an idea *appearing like a light bulb* versus the metaphorical frame of an idea as *a seed that takes root*. Metaphorically framing an idea as a *light bulb* led people to believe that the idea was of higher quality - when the idea came from male inventors. In contrast, for female inventors the idea was perceived of higher quality when it was metaphorically frames as a *seed*. The

authors argue that the metaphorical frame of an idea as a *light bulb* frames the idea as sudden and effortless, which is a stereotype connect to male geniuses. Thus, this study has both found that metaphorical frames influence our perceptions of a situation and also, that metaphorical frames are able to activate stereotypes and interact with them.

People and parties could make use of the fact that metaphorical frames can influence peoples' opinions. Indeed, the power of metaphorical framing has been deliberately used for different purposes, such as in politics. Metaphors can influence opinions on controversial topics, which is why they are so popular in politics and are considered effective persuasive tools (Mio, 1997). For example, how we think about terrorism was shaped by the metaphor of *war*. By analyzing the rhetoric in speeches by Bush (president in the US 2001-2009) on the topic of terrorism, Bartolucci (2012) demonstrated how Bush installed the metaphor of *war* in his politics, as for example when he used the metaphoric expression *win the war against terrorism, or the attacks were acts of war* (from: "Address to the Nation on the Terrorist Attacks, 11/9/01" and "Remarks Following a Meeting with the National Security Team, 12/9/01"). By installing the metaphor, he could use associations with *war* to his advantage. For example, in a *war*, there is no time to consider different arguments and less need to explain himself. Moreover, in a *war*, there are only two sides (us versus them), so if you were against Bush, you would be with the "terrorists". This was an effective way to repress opponents. Metaphorically framing political events a *war* has brought a feeling of fear, which Bush could use to induce the wish for a strong leader in people (himself). This example shows how metaphors can be used as frames to justify devastating political acts and affect whole nations.

In the medical field, people's beliefs can be influenced by metaphors, too. To exemplify, Hauser and Schwarz (2015) found that the metaphorical frame *fight against*

developing cancer - compared to a neutral frame - can reduce participants intention to prevent cancer. Participants with this frame had less intention to limit their own behavior, like consuming less red meat. Another study (Hendricks et al., 2018) found that people who could not recover from cancer were perceived to feel guiltier, when cancer was framed as a *battle*, in contrast to a *journey*. In their study, the metaphors *battle* and *journal* built a framework to understand the complex concept of cancer. When cancer was framed in terms of a *battle* (which patients had lost) or a *journey*, characteristics of the source domain *battle* or *journey* were mapped onto the target domain *cancer* and similarities between the source domain and the target domain were emphasized. Depending on the metaphorical frame used, different characteristics of the illness were highlighted. This mapping process (as described in 3.2) explains how patients developed different perspectives towards cancer.

Those examples show that framing a situation with the help of metaphors can fulfill several purposes: on the positive side, metaphors can reinforce socially desirable outcomes (Ahn et al., 2014; Landau et al., 2009) and possibly shape how people feel about hardships (such as *cancer as a journey*; (Hendricks et al., 2018)). On the other side, metaphors can be misused to negatively influence peoples' opinion on other groups or even to create a false picture of a situation (such as *win the war against terrorism*), which regularly happens in politics (Lederer, 2013; Loughnan et al., 2009; Musolff, 2014). It is important to remember that metaphors are not only cognitive but also cultural and social phenomena and their positive or negative impact depends on who is using them as well as on the intention of the transmitter. This demonstrates the power of metaphors and why it is important to study the impact for many different metaphors and in different situations. In this vein, the studies of my dissertation can be seen as part of an ever-growing body of research focused on

uncovering the unconscious assumptions, which can be evoked by metaphorical frames and which guide people's interpretation of complex topics within their cultural imprint.

Most of the above-mentioned examples came from the field of politics or health. The metaphorical frame I chose to study is an intersection of both: Surrogacy is a medical topic which is controversially debated in politics. Moreover, in our society mothers face many (gender) stereotypes, which can be reinforced by metaphors. And finally, on top of that, surrogate mothers might face even more, specific prejudices, which could possibly also be reinforced by metaphorical frames. Why surrogacy is perceived so differently by people, politicians and even countries, has hardly ever been debated. As wording, and more specifically metaphorical frames, plays a huge role in the formation of opinions, the metaphorical frames used for surrogacy might have played and still plays a role in how surrogacy is perceived in politics.

As above-mentioned literature showed that metaphors have been found to influence opinions on controversial topics in both the political as well as the medical field, I assumed that the metaphorical frame used to describe surrogacy might also influence people's opinion towards surrogacy and surrogates. Therefore, in the following study I assessed the metaphorical influence on the opinion towards surrogacy.

4.2 Do Metaphors Make Opinions? An Empirical Study on the Effect of Metaphorical Framing on the Opinion on Surrogacy (Manuscript 2)

In my second study, I wanted to assess whether using different metaphorical frames for the concept of surrogacy could influence people's opinion. The three metaphorical frames for surrogacy were "Leihmutter" ("*mother to lend*"), "Mietmutter" ("*mother to rent*") and "Ersatzmutter" ("*substitute mother*"). All three expressions for surrogacy can be found in Germany, however, with different frequencies. The most commonly used one is

“Leihmutter” (“*mother to lend*”). This term is mostly used in everyday language and by the media. The term “Mietmutter” (“*mother to rent*”) is less common, however, Thomale (2015) suggests this term as the more accurate one. Lastly, the term “Ersatzmutter” (“*substitute mother*”) is the official term in Germany for surrogacy. It is used in legal guidelines (e.g., §13a AdVerMiG; Ersatzmutter) and is sometimes used by the media, too. The distinction of those three metaphorical frames is with regard to which kind of mother the surrogate mother is suggested to be (*lending, renting or substitute*). The main difference of those three frames for the surrogate mother is with regard to money: Lending mostly includes no monetary compensation and renting always includes monetary compensation. Substitute is the most neutral term with regard to monetary compensation. How those three terms can be perceived as metaphorical frames (in contrast to literal terms) was discussed in section 3.6 (surrogacy as a metaphor).

To assess whether the metaphorical frame for surrogacy can influence people opinions towards surrogacy I gathered data from 236 participants online. To compare the frames, participants were randomly allocated to one of three groups. Between those groups, only the metaphorical frame for surrogacy differed. All participants were told to read an informative text about surrogacy and thereafter answer questions about their attitude towards surrogacy. To assess their attitude towards surrogacy, I used the validated questionnaire “Attitude toward Surrogacy Questionnaire” I created in study 1 (Mohnke et al., 2019).

To investigate if participants’ opinions on surrogacy was influenced by the frame used for surrogacy, three ANOVAS were conducted. The predictor in this calculation was the metaphorical frame, which differed between the three groups. The three levels of the predictor were: *mother to rent, mother to lend and substitute mother*. The dependent

variables for the three ANOVAS were “attitude towards surrogacy in general”, “attitude towards surrogate mothers” and “attitude towards monetary compensation”.

Results revealed that the metaphorical frames had an influence on some, but not all variables. The variable “attitude towards surrogacy in general” was not influenced by the metaphorical frame. However, the variables “attitude towards surrogate mothers” and “attitude towards monetary compensation” were influenced by the metaphorical frame. For the variable “attitude towards surrogate mothers”, the results indicated that participants with the frame “*mother to lend*” showed more support for surrogates than participants with the frame “*mother to rent*” and “*substitute mother*”. For the variable “attitude towards monetary compensation” results indicated participants with the frame “*mother to rent*” rejected monetary compensation more often than others.

The results support the idea that a metaphorical frame can influence the opinion towards controversial political topics, such as surrogacy. The metaphorical term “*mother to rent*” frames surrogacy as an unemotional business act, which might have evoked reactance regarding the payment of surrogate mothers. When the metaphorical frame implies that surrogacy involves monetary compensation, participants favoured less monetary compensation for the surrogate mother.

Complex social topics are subject to multiple potential metaphoric interpretations, and therefore it is possible that a specific metaphor needs to be activated to transfer one’s attitudes toward a topic to another topic (Tourangeau & Sternberg, 1982). Theories on metaphors suggest that using metaphorical frames for surrogacy which activate the concept of monetary compensation (e.g., “*mother to rent*”) in contrast to alternate frames (e.g., “*substitute mother*”), will lead to associations of money-relevant information in line with one’s schema for surrogacy. Following the framing function of metaphors by Entman (1993),

the metaphors used for surrogacy highlighted a particular problem (surrogacy involves monetary compensation) and possibly gave a causal interpretation of the intentions of the surrogate (the surrogate has no altruistic intentions), which participants resented. In line with the interaction view (Black, 1979) the cognitive structure of the source domain (*money*) was transferred on the goal domain (*surrogate mother*). One interpretation might be that the integration of associations of motherhood and of money might have resulted in strong negative feelings, as motherhood is typically more associated with giving, selflessness and unconditional love. Those associations might have felt incompatible with the associations participants had with money, which led to rejection of the idea of monetary compensation of a surrogate mother and following, to disadvantages for the surrogate.

The findings of the second study of my dissertation were published under the name “Do metaphors make opinions? An empirical study on the effect of metaphorical framing on the opinion on surrogacy” in the journal *Metaphor and the Social World* (Mohnke, Christmann, Roos, & Thomale, 2022).

5. The Effect of Metaphorical Framing on Decision-Making

The results of my second study suggested that metaphorical framing could indeed influence the opinion of the participants towards some aspects of surrogacy. In my third study, I wanted to find out whether the effect of metaphorical frames could go beyond the influence on opinions. People can have an opinion on a topic (e.g., environmental protection is important) however, that does not necessarily mean they make decisions in accordance with that opinion (e.g., still buying food wrapped in plastic). Therefore, I wanted to find out whether the different metaphorical frames for surrogacy could influence not only opinions, but if that effect would also hold true for the decisions of participants. With different laws between countries, and the emerging “reproductive tourism”, surrogacy is an important

topic in the legal domain. Therefore, I wanted to analyse whether the three metaphorical frames for surrogacy were able to influence the decision-making process in the legal domain, specifically the decisions made in a fictional legal case, called “mock trial”.

The effect of metaphorical framing on decision-making has been empirically explored in various fields (e.g., on health-related decisions, or in politics), however, little experimental research has been conducted in the legal domain and especially in the courtroom. Therefore, I will dedicate the next section (5.1) to the metaphor research which has been conducted on decision-making in general, before I will outline the metaphor research which has been conducted in the legal field in section 5.2.

5.1 Previous Research on the Influence of Metaphor on Decision-Making

In my literature review I discovered that indeed, several studies have found an effect of metaphorical frames on decision-making. To exemplify, Robins and Mayer (2000) tested the metaphor framing hypothesis, stating that people’s decisions on how to deal with a problem are influenced by the metaphor used to frame the problem. In six vignettes they described different dilemmas and found that across all six vignettes, the solution of the participants was subtly influenced by the metaphorical frame used. To exemplify, one question was whether or not a couple should get a prenuptial agreement. Vignettes either described the prenuptial as a *safety net* or the prenuptial as a *weapon*. The authors found that metaphorical frames indeed made a difference: The decision for a prenuptial agreement was more likely in the *safety net* metaphor condition. Another study analysed whether the effect of metaphors could be useful for the health domain and compared different metaphorical frames for the flu. They found that metaphorical frames influenced the decision-making of participants concerning vaccination: framing the flu metaphorically (as a *beast, riot, army, or weed*) in contrast to literally (as a virus) increased people’s willingness

to get vaccinated (Scherer et al., 2015). In conclusion, metaphorical framing can influence the decision-making process of people by influencing how a situation is evaluated, by influencing people's attitude towards risk-taking or by influencing people's motivation. It seems that if people accept the metaphor as appropriate for a situation, the decision as suggested by the metaphor becomes a possible course of action (Cox, 2012).

This makes the use of metaphors beneficial for countless situations, such as in politics, to increase compliance with governmental policies, in the health sector and lastly, also for lawyers in the courtroom. If the decision-making of the jury or maybe even the judges could be influenced by metaphorical framing, lawyers would be ill-advised not to use them. In fact, studies have shown that metaphorical framing is popular in the courtroom (Ebbesson, 2008; Laugerud, 2020). In contrast to that, the empirical evidence on the influence of metaphorical framing on the decision-making process in the legal context is scarce.

5.2 Metaphors in the Legal Context

The influence of metaphors on decisions in the courtroom has been the topic of few field studies and even fewer experimental studies. One study which also deals with metaphor usage in family court is the archival study by Berger (2008). By analysing real decisions in court, Berger demonstrates how implicit assumptions, highlighted by metaphors, have influenced decisions concerning child custody. Metaphors and stories, which remind of the idealized picture of motherhood, have disadvantages for those women filing for custody, who did not fit into that picture. To exemplify, a metaphorical frame for the ideal motherhood could be *Madonna* (the biblical representation of Mary). With this metaphor, a lot of characteristics could then lead to the actual women's disadvantage and underline her deviation from the ideal: following a career, engaging in sexual practice,

having remarried - just to name a few. Berger (2008) showed how metaphorical framing could influence decisions at court by activating high expectations towards mothers and an urge to penalize deviation from implicit stereotypes.

In another archival study, Parker (2012) analysed the impact of the metaphor “the perfect storm” on real court decisions and found that it can be used to highlight very specific aspects of a case. In several cases, “the perfect storm” metaphor was used to frame the action of the accused as an unfortunate string of events of bad luck. The metaphor was able to legitimize actions and remove blame from the accused. In line with the field study of Thornburg (2006), who analysed the impact of the “fishing” metaphor in the courtroom and found that it is utilized to doubt the concern of the plaintiff, both articles agree that metaphors can be a powerful linguistic device to shape the jurors’ opinions. Thornburg (2006) even goes so far as to suggest banning certain metaphors from court, as they can lead judges astray. In a mock trial, one experimental study compared the impact of a metaphorical with a non-metaphorical description of a perpetrator (Vasquez et al., 2014). The results showed that metaphorically framing the perpetrator as animalistic increased the number of years of the sentences which the participants suggested. Framing a perpetrator as animalistic helps to de-humanize them, which justifies higher sentences and even the death sentence. Atavism – the retention of animalistic traits in humans – was once a common concept in criminology. The authors argue that even though atavism is outdated, its ideas are re-activated when perpetrators are metaphorically framed as animalistic. Lastly, in judicial situations, metaphors have been found to be helpful for victims. After interviewing female rape victims, Laugerud (2020) suggested that in situations in which the victim and the perpetrator are in the same room and the judge will eventually decide on the verdict, it can create meaning for victims to reframe the courtroom situation with the help of the game

metaphor. Seeing the legal proceedings as a game in which two parties are competing might help victims to regain agency during this excruciating and possibly re-traumatizing process.

Concluding, these studies indicate that there might be a relationship between metaphorical language and the decision-making process at court. At the same time, experimental research on the influence of metaphorical frames on the decisions at court is still scarce. As my previous study has shown that the three metaphorical frames can make a difference for the opinion people have about surrogacy, this might also be true for the decisions people make with regard to surrogacy in a legal situation. In my third study I assessed whether using different metaphorical frames for the same factual situation influences participants' fictional verdict. In an empirical study, I compared the effect of three metaphorical frames for surrogacy on the decisions participants made in a mock trial at court. By doing so, I aimed to find out whether the metaphors, which are such a popular linguistic tool at court, indeed have the power to influence jurors' or judges' decisions. In contrast to daily life decisions, decisions at court are supposedly neutral and fair decisions, guided by strict rules and laws. This assumption makes it even more interesting to assess if something as subjective as the language used can influence the legal decisions as well.

5.3 Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict? An Empirical Study on the Case of Surrogates (Manuscript 3)

In the courtroom, metaphors are a widely used. However, as shown in the previous section, only few empirical studies have looked at the influence of metaphorical frames on decision-making in the courtroom. In the following, I will describe my third study, in which I aimed to empirically assess the influence of metaphorical frames on decisions in a mock trial, addressing a fictional case of a surrogate against intended parents.

The three different metaphorical frames were *mother to rent* (“Mietmutter”), *mother to lend* (“Leihmutter”) and *substitute mother* (“Ersatzmutter”). The three terms all contain the word “mother”, but differ with regard to the word which will be associated with mother, which is “rent” “lend” and “substitute” – described in more detail in section 3.4. The three metaphorical frames convey different messages concerning surrogate motherhood. Surrogacy is a concept which violates the idea of stereotypical parenthood and within surrogacy, surrogates violate many prescriptive stereotypes of motherhood. “Normal” mothers get shamed from society a lot, especially when they violate stereotypes of motherhood (e.g., “does not breastfeed”, “goes back to work too early”, “has interests beyond her children” etc). Therefore, it comes to no surprise that studies found surrogate mothers get shamed even more. The stigma for surrogates can be categorized into four types: Bad mothers, bad wives, pathetic losers, and greedy women (Khvorostyanov & Yeshua-Katz, 2020). Especially concerning the last type of stigma, greedy women, the three metaphorical terms for surrogacy are not neutral. The metaphorical frame might differ with regard to which extend the stigma for surrogates is activated, as they mainly vary with regard to associations with money: *lend* is associated with no monetary compensation, *rent* is associated with monetary compensation and *substitute* does not activate any associations with money. My second study (described in 4.2) has shown that the metaphorical frames influence the opinion people have about surrogacy, especially towards the surrogate and towards her being monetarily compensated. I aimed to find out whether participants make different decisions concerning the surrogate in a fictional courtroom, when different metaphorical frames for surrogacy are used.

In my third study, participants read about a fictional case, upon which I built up a mock trial. In the fictional case, a surrogate wanted to keep the baby, which is one of the

concerns, intended parents could have. Both the side of the surrogate as well as the side of the intended parents are described in detail. After reading about the case, participants were asked to imagine being jurors in a mock trial and make various decisions about the surrogate and the baby (questions displayed in detail in manuscript 3). Decisions of the participants included questions concerning child custody and details about the custody, as for example visiting rights. One decision included the concept of money, asking whether the surrogate would have to pay a penalty fee, as she violated a contract. As my second study indicated that acceptance of monetary compensation of the surrogate was influenced by the metaphorical frame used for surrogacy, I wanted to assess if the metaphorical frame could also influence whether the surrogate would have to pay a penalty fee. If so, this could possibly be due to the stigma “greedy women”, which might have been activated to a different extent by the metaphorical frames.

For the study I gathered the information of 204 participants. Data collection was conducted mainly computerized, at the Institute of Psychology at the University of Heidelberg. Participants were assigned to one of three groups. Each group had a different metaphorical frame for surrogacy (*mother to rent, mother to lend, substitute mother*), otherwise, they did not differ. Thereafter, participants were given the fictional case, in which the metaphorical frame was repeated 12 times. After the instruction to imagine being jurors at a mock trial, participants were asked to make the decisions listed as follows.

- 1) Who gets custody of the child? (The surrogate and her husband/The intended parents)
 - Will the other party get visiting rights? (Yes/No)
 - Should the child know about the arrangement, once it is older? (Yes/No)
- 2) Does the surrogate have to pay a penalty? (Yes/No)

- If yes, how much should the penalty be? (Answer options were: 1€-100€; 101€-500€; 501€-1000€; 1001€-5000€; 5001€-10000€; 10001€-100000€; higher than 100000€)

To find out whether the metaphorical frame for surrogacy influenced participants' decision making, I conducted a Chi-square test. The results indicated that several decisions of the participants - but not all of them - were influenced by the metaphorical frame. No influence was found for child custody: most participants decided that custody should be granted to the intended parents, regardless of the metaphorical frame. However, several other decisions were influenced by the metaphorical frame. Participants with the frame "*mother to rent*" were significantly more likely to decide that the surrogate should be withheld from visiting rights. Moreover, participants with the frame "*mother to rent*" were more supportive of the idea to keep the surrogacy process a secret from the child. With regard to the monetary aspect, there was no difference between the frames in participants' decision of whether the surrogate should pay a penalty fee. However, there was a difference between the frames with regard to the height of the proposed fee: participants with the frame "*mother to rent*" decided for a significantly higher fee, than the other two frames.

The results indicate that metaphorical frames might influence decision making in the legal domain. In my study I found that between the three frames for surrogacy, participants made significantly different decisions. Even though not all decisions were influenced by the frames, overall, in the group with the frame "*mother to rent*" the fictional surrogate had to face worse outcomes at court. This demonstrates that depending on the wording used for surrogacy, decisions concerning this topic could vary. In this particular example with the three frames "*mother to rent*", "*mother to lend*" and "*substitute mother*", the frame "*mother to rent*" might induce resistance in participants, as of all terms, this term might have mostly evoked the associations with surrogacy as a business act. This extremely violates the

prescribed gender roles for motherhood, which might have led to the higher number of decisions which were made to the surrogate's disadvantage.

The field of law aims at being just, neutral and treating everybody equal. As I show above, metaphors shape our perception and influence our decisions and possibly also the decision-making process in the legal domain. Therefore, using metaphors in the field of law seems counterintuitive. However, in her article, Elizabeth Thornburg - who is a professor at Southern Methodist University School of Law - stated that "it is almost impossible to talk about trial without using metaphors" (Thornburg, 1995; pp. 231-232). In the courtroom, as in everyday language, metaphors are used to frame circumstances and put them in a certain context, to explain complex topics and to underline specific arguments. Metaphors are an essential piece of the legal culture (Ebbesson, 2008) and it seems impossible to ban the use of metaphors in the courtroom.

Therefore, my conclusion is as follows: First, it is important to analyse the effect metaphors can have in law - to understand what aspect of a case they highlight, if they shape perceptions of people during a trial and, maybe most importantly, if their effect on our perception leads to disadvantages for certain marginalized groups in the courtroom. Second, it is important for people working in the field of law to be aware of the effect of metaphors. To enable awareness, teaching about the effect of language could be a part of the educational process. Third, people working in the field of law should be made aware of the pitfalls of stereotypes and should be given the opportunity to question their own stereotypical thinking. This, in my opinion, could lower the chance that metaphors initiate stereotypical thinking in the courtroom and could raise the chance to question the use of certain metaphors in the legal context. All in all, I would not suggest to ban metaphors from the courtroom, but argue for a more conscious use of metaphorical language.

The findings of the third study of my dissertation were published under the name “Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict? An Empirical Study on the Case of Surrogates” in the journal *Psychology of Language and Communication* (in press).

6 Discussion

My research questions were “do different metaphorical frames for surrogate mother influence the opinion towards surrogates and is that relevant in the field of law?” The results of my three studies show that first, little research has been conducted on the opinion towards surrogacy in Germany. Second, different terms for surrogacy exist in Germany. Depending on which metaphorical frame I used, the opinions of participants differed, especially regarding monetary compensation of the surrogate. Third, the metaphorical frames could influence decision-making of participants regarding several legal questions in a mock trial.

6.1 Theoretical Contributions

In my first study, I developed and validated the first German questionnaire on people’s opinion about surrogacy. I used the questionnaire for my second study, in which I varied the wording for surrogacy (“Leihmutter”, “Mietmutter”, “Ersatzmutter”) in the questionnaire and by doing so, changed the metaphorical frames for surrogacy. The results showed that the opinion of participants could be influenced by the metaphorical frames, even though the differences between the groups were only one-word variations. Opinion towards payment of the surrogate mothers was influenced by the metaphorical frame used for surrogacy. In particular, participants with the metaphorical frame “*mother to rent*” opposed monetary compensation of surrogate mothers more frequently than participants with the frame “*substitute mother*”. In my third study, I tested whether the manipulation of

the wording for surrogacy would also influence participants decision-making. I used a fictional legal setting: in a mock trial, participants decided on a case of the surrogate against the intended parents. Results implicated that metaphorical framing indeed made a difference for participants' decisions: several decisions were influenced by the metaphorical frame used. In the mock trial, the surrogate in the group "*mother to rent*" had several disadvantages compared to the groups "*mother to lend*" and "*substitute mother*". 1) Participants with the frame "*mother to rent*" denied the surrogate visiting rights for the child significantly more often than participants in the other two groups. 2) If participants decided that custody should be granted to the intended parents, those participants with the frame "*mother to rent*" supported the idea to hide the surrogacy arrangement from the child significantly more often, than the participants in the other two groups. 3) Of the 77 participants who gave the surrogate mother a penalty fee, those with the frames "*mother to rent*" chose higher penalty fees significantly more often than the participants in the other two groups.

It might be possible that the metaphorical term "*mother to rent*" framed surrogacy as an unemotional business act which participants resisted, for example by favouring less monetary compensation of the surrogate mother (study 2), or giving the surrogate a higher penalty fee (study 3). Possibly, the metaphorical frame highlights the aspect of surrogacy that surrogates get monetary compensation. In this line, the metaphorical frame may have stressed participants' personal incongruence between the stereotypical associations with female traits such as being selfless, "motherly" and caring and in the case of surrogacy monetary compensation for carrying a child. Participants may have rejected the concept of women being paid for a kind of work, for which they are usually being expected to carry out without monetary compensation. The studies should be seen as part of a growing body of

research revealing the unconscious associations, which can be induced by metaphoric language. Taken together, the research indicates that metaphors can frame peoples' comprehension of complex topics with political relevance.

6.2 Practical Implications

The present studies implicate that metaphorical frames can influence the perception of a group of people. This has been found in several earlier studies, too. To give two examples: Elmore and Luna-Lucero (2017) found that whether participants saw people as geniuses depended on the metaphor which was used (an idea as a *light bulb* versus a *seed that takes root*) – and people's gender. Another study in 1999 has looked at metaphors which have been used to frame people who came from another country to work in California and it found that metaphors were used to dehumanize immigrant workers in the public perception (Ana, 1999). People who are marginalized in a society and/or are at risk to be framed as an outgroup will always be more susceptible for stereotypical metaphors. In this case metaphors can be used as frames to generalize and imply certain characteristics or motives for individuals who belong to a certain group, which often works at their disadvantage. Therefore, the present findings suggest a conscious choice of terms for sensitive medical and political topics, also for surrogacy.

One of the main questions of my dissertation was if the effect of metaphorical framing on our perception can lead to disadvantages in the legal world. Considering the results of the literature review as well as my own studies, the answer to this question is: It is likely that in the legal world, metaphorical framing can shape our perception to the disadvantage of certain groups, which is also true for surrogates. For this reason, researchers argue for specific metaphors to be removed from court (Thornburg, 2006). However, in my opinion, several arguments speak against a "ban" of metaphors at court: First, while

traditionally, metaphors have been mistaken as both rare and largely ornamental, research nowadays suggests that metaphors are present in everyday language and can improve communication (e.g., Casarett et al., 2010; Graesser et al., 1989). For example, Reddy (1978) argues that up to 70% of natural language use employs some type of metaphoric content. Second, during my thesis, it became clear that metaphors are used extensively in law related matters. In the courtroom, as in everyday language, metaphors are used to frame circumstances, to describe complex topics and to underline arguments. Metaphors seem to be an essential piece of the legal culture (Ebbesson, 2008). Third, as it is true for surrogacy, some metaphors are not seen as “metaphoric” on first sight. Therefore, excluding all metaphors from court would be time consuming and highly impractical. The alternative to banishing all metaphors from the field of law would be to use them more consciously, expose those metaphors which disadvantage marginalized groups and look for fairer alternatives, which do not discriminate against, or play into stereotypes, of whole groups. Using metaphors which activate stereotypes of whole groups goes against the idea of equality at court. The next step is to integrate knowledge about the influence of metaphorical frames in the system, by starting to use metaphors more consciously and by teaching the members of the system, especially law students, about the power of metaphorical language.

On a larger scale, surrogacy is a controversial political and health-related topic and policy regarding surrogacy varies between countries. Metaphors reinforce cultural stereotypes and shape social policy (Nerlich et al., 2002). This might also have happened for surrogacy and might even explain some of the different policies between countries. The metaphorical frames for surrogacy might have already influenced the opinion of politicians and therefore influenced the equivalent law regarding surrogacy. The conclusion of my

thesis, however, is not to completely ban the terms for surrogacy in political debates.

Rather, I suggest that in political debates, the terms for surrogacy should be used more consciously by acknowledging their loaded meaning and the assumptions surrounding the respective terms.

6.3 Limitations and Ideas for Future Research

Limitations

All studies used German language and only included participants who spoke German as a mother-language or fluently, to ensure a similar understanding of metaphors. However, results could have been different if the study had included people who do not speak German fluently and therefore possibly process the metaphorical terms for surrogacy differently. Moreover, results only count for the German terms for surrogacy and cannot be generalized to terms for surrogacy in other languages.

The effects of the three terms for surrogacy were compared with each other. As the terms can be regarded as metaphoric, comparison of the effects was between three metaphoric frames and not between the effect of the frames and the effect of a control condition. In the case of the terms for surrogacy, no literal term for surrogacy existed. This is not uncommon when researching the effect of metaphoric terms, in fact there are other studies which have worked without a control condition when no literal condition existed (Thibodeau & Boroditsky, 2011). However, methodologically, a literal control condition should be used whenever possible.

After finishing the studies, it remains unclear why for some topics no effect was found (e.g., an effect was found for attitude towards surrogates, but not for attitude towards surrogacy). Reasons could be manifold - such as a ceiling effect or a higher reluctance of participants for specific topics – and the next step would be to specifically test

those possible reasons. Moreover, within the metaphor framing effect research there are differences between findings from different research paradigms. To exemplify, of the studies which have been conducted about metaphorical framing of political issues, a literature review found that only 77% of published experimental studies claim effects of metaphors on opinion, while most studies using the methodology of critical discourse analysis report a strong effect (Boeynaems et al., 2017). The present study is in line with the observations from experimental studies: effects can be found for some, but not all hypothesis.

Metaphorical frames outside the lab are usually stronger. For example, metaphorical frames used in political speeches often have been pre-tested for efficiency and the metaphorical frames themselves are often more extreme ones, than the ones used in experiments.

Moreover, those speeches also include descriptions that underline the intended metaphorical frame (Mio, 1997). In contrast, in my studies I used minimal manipulations (one-word metaphors): The texts I presented in the three groups were the same, only the frames for surrogacy, surrogate and intended parents differed. This could be a reason why some effects were only subtle and for some topics, no effect was found.

The present research is about the impact of different wordings which can be used in Germany for surrogacy - the studies do not aim for a moral evaluation of the impact of surrogacy on the people involved. Moreover, none of the participants have had direct contact with surrogacy before. The present research is not able to answer the question of the impact the process of surrogacy can have on a surrogate. Furthermore, the research did not aim to - and cannot answer the question what psychological effect surrogacy can have on the intended parents or children involved in the surrogacy process. In my articles, I described the empirical studies I conducted. Even though complete neutrality is never possible, no ethical or moral judgement about the surrogacy process was part of the studies

and therefore, the articles are limited in the sense that they cannot give any ethical or moral estimations of the (largely varying) surrogacy situations.

Future research

After having finished my third study, I have one concrete follow up research question regarding surrogates in mind. As mentioned above, the stigma which surrogates face can be categorized in four types: Bad mothers, bad wives, pathetic losers, and greedy women (Khvorostyanov & Yeshua-Katz, 2020). The three metaphorical terms used in my studies mainly differ with regard to associations with money. So possibly, the three metaphorical frames activate the “greedy women” stigma of surrogates to a different extend. In my studies, I hypothesized that the reason why people develop different opinions about surrogates and make different decisions at court regarding surrogate rights is that the three metaphorical frames activate different associations between surrogacy and money. A follow up study could test whether surrogates are perceived as “greedier”, when the metaphorical frame “*mother to rent*” is used, than when one of the other two frames are used.

In his article, Arms (1999) suggests that some English metaphors which are conventionally used in law can be harmful for women in several ways. In my dissertation, I do not only assess the effect of the use of different metaphors for argumentation in court, I assess the effect of a woman being metaphorically described as a “*substitute mother*”, a “*mother to lend*” or a “*mother to rent*”. Thus, the metaphors in my dissertation directly influence the perception of the woman. In his article, Arms (1999) also analyses a case in which the women are metaphorically described and how this leads to disadvantages: When women are framed as property of their husbands, they are degraded as “objects”, whereas the men were always perceived as acting “subjects”. Objects, however, cannot own property, which is why in divorce cases, the metaphorical framing of women as objects

served as an advantage for men. Arguably, the term “*mother to rent*” makes women more of an object (which can be rented) than the term “*substitute mother*”. In light of the study findings of Arms, it would be interesting to further analyse the hypothesis that the metaphorical frames influence whether people see a surrogate as a self-determined woman (*substitute mother*), or an object (*mother to rent*), because next to resentment of paying for motherhood, that could give one more causal explanation for participants wanting to pay “*mothers to rent*” less than “*substitute mothers*”.

On a more general note, while working on my dissertation topic, I noticed two big data gaps in research areas loosely related to my topic. First, there is still missing data on the interconnection of the circumstances, the legal rights and psychological well-being of surrogates. Most likely, this varies hugely between countries, between the different ways surrogacy can take place and probably depends -among others- largely on the rights and restrictions of surrogates, access to free and adequate medical and psychological care, financial dependency of the surrogate and stigma in the respective culture. In a world where surrogacy exists and is partly legal, it should be guaranteed, that anywhere surrogacy takes place, it happens under save and the best-possible circumstances. To do so, studies should work together with surrogates, to ensure that their needs, worries and risks are known, can be cared for and are implemented by law. Moreover, more research would be important to study the needs of the intended parents and the children resulting from surrogacy. As surrogacy exists and can possibly never be totally banished, studies should ensure to know the risks of surrogacy for all parties, to lower the possibility of medical or psychological damage for anyone involved. Second, another big data gap I noticed concerns the impact of metaphorical language in the courtroom. While research has indicated that metaphorical framing can affect the decision-making process, studies on the effect of metaphorical

framing in the courtroom are still largely of qualitative nature. My third study on the impact of metaphorical framing on a case of a surrogate indicates that quantitative research underlines the results of the qualitative research done so far: Metaphorical language can indeed effect decision-making in a fictional courtroom situation. Future studies could build up on the suggestions of the qualitative studies as well as on the results of my study. First, more quantitative studies should validate the present results. Second, it would be interesting to look at the underlying mechanisms, which enable, reduce or enhance the effect of metaphorical framing on the decision-makers in judicial situations.

7 Conclusion

With political topics such as surrogacy, research quickly jumps to the question “so what needs to be done?” For this thesis, the question would translate as “so what term shall we use?” Politically, concerning surrogacy, no simple answer can be given by this thesis. The thesis clearly indicated that different framing for surrogacy leads to different judgements of surrogates. Instead, my answer would be: listen to experts and all parties involved before making laws, think about the language used and be aware of the impact it holds. Moreover, my advice would be: Acknowledge that language has an impact. It impacts us politically, structurally and in our private life.

As the contribution of the thesis is very specific and cannot be generalized to other topics in the field of politics and law, I hope that this thesis and the corresponding articles encourage others to take an interdisciplinary approach to psycholinguistics and legal studies. The present study shows the importance not only of “wording” in general, but of figurative language and specifically of metaphorical framing, to impact our perception of people.

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Appendix 1

Manuscript 1: Mohnke, M., Thomale, C., Roos, Y., & Christmann, U. (2019). Development and Validation of an “Attitude toward Surrogacy Questionnaire” in a German Population.

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Development and Validation of an 'Attitude toward Surrogacy Questionnaire' in a German Population

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Abstract

Introduction: Even though surrogacy is illegal in Germany, the consequences of it are present also in Germany, as several couples evade to other countries to pursue surrogacy. The opinion of the German population towards surrogacy has hardly been assessed in the past and no German questionnaire to assess this opinion exists. Therefore, the aim of this study was to develop a validated German questionnaire to enable an in-depth assessment of the opinion towards surrogacy.

Method: The opinion of 553 participants was assessed with 29 items and analysed. Most of these items were derived from relevant studies conducted in the past. Moreover, some items were added on the basis of the expertise of the research team and also, to ensure that the questionnaire was culturally appropriate. A Principal Component Analysis (PCA) was conducted, to identify relevant items and underlying factors.

Result: The final “German Attitude Towards Surrogacy Questionnaire” consists of 13 items. The PCA identified three scales of the questionnaire: general attitude, attitude towards monetary compensation and attitude towards surrogate mothers, which accounted for 71.34% of the data variance.

Discussion: By developing a tool to assess the opinion of the German population towards surrogacy, the authors hope that this will contribute to a deeper understanding of surrogacy. The questionnaire enables to capture the opinion of the German population towards several aspects of surrogacy, including the general opinion, opinion towards the surrogate mother, own intentions, legal aspects, as well as towards monetary compensation of the surrogate. The questionnaire was developed by concentrating on statistical validity and reliability. In comparison to the existing questionnaires about surrogacy this questionnaire is available in German and adapted to be cultural-specific.

Keywords: Surrogacy, surrogate mothers, monetary compensation, Principal Component Analysis, Questionnaire development, German questionnaire

Development and Validation of Attitude toward Surrogacy Questionnaire in German population

There are various reasons for couples for being involuntarily childless and the rate of involuntary childless couples increases. In Germany, about 3 % of the couples are definitely involuntarily childless (Brähler & Stöbel-Richter, 2002). Nowadays, several infertility treatment options exist, such as in-vitro-fertilisation or intracytoplasmic sperm injection. In Germany, about 2 % of all births result from those procedures (Michelmann & Himmel, 2005). However, those procedures are not always feasible for couples. Other options in reproductive medicine exist, such as egg donation or surrogate mothering. Those options are prohibited in Germany (Frommel et al., 2010), but the legislation is inconsistent throughout Europe and in some European countries egg donation or surrogacy are legal procedures. To exemplify, surrogacy is – under certain conditions – legal in the Netherlands, Greece and England. Nevertheless, in addition to Germany, surrogacy is among others forbidden in Switzerland, Austria and Norway. Apart from some European countries, surrogacy is legal in some states of the US. In contrast, surrogacy has been restricted to the local population in India.

Medical reproductive procedures have evoked a discussion about ethical and legal aspects and German questionnaires have been developed on several topics related to controversial methods in reproductive medicine. To exemplify, German questionnaires exist to assess the attitude towards sperm donation (Thorn et al., 2009), egg donation (Krones et al., 2006; Schröder et al., 2004), embryonic stem cell research (Krones et al., 2006), multiple birth following in-vitro-fertilisation (Schröder et al., 2003), and preimplantation genetic diagnosis (Meister et al., 2005).

In Germany, there has been little debate about surrogacy in comparison to other reproductive techniques. As surrogacy will most likely remain illegal in Germany in the near future, both politics and medicine could bypass the topic so far. In fact, discussions in Germany are mostly restricted to isolated international incidents which have caught the attention of the media. However, notwithstanding the lack of a public discussion, surrogacy is an important topic for many childless couples for various reasons. First, surrogate mothering is possible in many other countries. Second, to enable the possibility of having a child through surrogacy, couples currently evade German regulations by travelling to other countries such as Hungary or the US, leading to the so-called “reproductive tourism”

(Pennings, 2004; Shenfield et al., 2010). However, in Germany, legally, the mother of the child is defined as the women who gave birth to the child (Frommel et al., 2010). Therefore, performing a surrogate procedure in a foreign country is related to several problems such as the legal descent of the child in Germany. Most of the German couples do not anticipate the dimensions of the legal, social and psychological consequences that follow the decision of seeking a surrogate in another country (Meyer-Spendler, 2015).

Thus, even though surrogacy is not openly discussed in Germany, the consequences of it are present nonetheless. Not discussing surrogacy means that German couples will continue making uninformed decisions in the future, as they are gaining most of their information about surrogacy from companies which make their profit by promoting surrogacy. This demonstrates the relevance to start an open discussion about the issues of surrogacy and to assess the public opinion towards this topic. To gain information about the public opinion, several methodologies exist. One of the most common methods are self-report scales, ideally within a validated and reliable questionnaire (Hendrick et al., 2013), which does not exist in Germany yet. Therefore, a German questionnaire is needed, covering a wide range of topics in order to address various groups of interest.

Existing questionnaires about the attitude towards surrogacy

Non-German questionnaires to assess attitude towards surrogacy of infertile participants

When a questionnaire is developed, its questions can be adjusted to a certain target group. Regarding attitude towards surrogacy, one of the target groups are infertile people. Questionnaires targeting infertile people can differ from other questionnaires in several aspects. To exemplify, questions can take into account how personally affected participants are by reproductive medicine techniques. Studies have shown that attitude towards medical reproductive procedures may significantly differ between fertile and infertile couples (Halman et al., 1992). In Germany, no study has assessed attitude towards surrogacy in infertile couples yet. However, there are a couple of studies that assessed infertile couples' attitudes towards surrogacy which have been conducted in Turkey, Iran and Japan. While some of them exclusively assessed the opinion on surrogacy, others assessed the attitude towards several reproductive medicine techniques and included only few questions about surrogacy within a larger questionnaire.

Firstly, in Turkey, two studies included a question about surrogacy in their questionnaire for infertile women. Baykal et al. (2008) administered a questionnaire to

infertile Turkish women regarding their attitudes towards gamete donation and gestational surrogacy. In this questionnaire, only the intention to use a surrogacy arrangement in case of infertility was addressed. Similarly, Kilic et al. (2009) asked woman who had applied for an infertility treatment about their preference for possible treatments. Options given were to use no treatment, to consider adoption, egg donation or surrogate mothering. Like in Baykal et al. (2008), other aspects of surrogacy were not covered.

Secondly, in Iran, an elaborated questionnaire on this topic in infertile couples is the "gestational surrogacy attitudes scale" developed by Kian et al. (2016) to assess the approval of surrogacy in Iranian infertile couples. The questionnaire was developed by gathering item material from literature reviews and from a qualitative pilot study. Its items were divided into five subscales including "acceptance of surrogacy", "surrogacy and public attitudes", "child born through surrogacy", "surrogate mother", and "intentional attitude and surrogacy future attempt". Content validity was rated high by an expert panel. Another questionnaire used on an Iranian sample is the one by Rahmani et al. (2011). Most items regarding participants' opinion on surrogacy were gathered from previous studies (Jadva et al., 2003; Kilic et al., 2009; Minai et al., 2007; Poote & van den Akker, 2008; Sohrabvand & Jafarabadi, 2005). Additionally, some items were developed by the research team. Together, the items covered legal and religious issues, conditions for the use of surrogacy, children born through surrogacy, surrogate mother, and the tendency to use surrogacy. In contrast to the two previous studies which dedicated a whole questionnaire to the topic of surrogacy, the study by Sohrabvand and Jafarabadi (2005) covered a range of assisted reproductive techniques. More specifically, knowledge and attitudes of infertile couples about assisted reproductive technology, including surrogacy, was gathered in a multiple-choice format. This resembles both Baykal et al. (2008) and Kilic et al. (2009).

Lastly, in Japan, Saito and Matsuo (2009) asked infertile couples about their willingness to use surrogacy if they were not able to have a child on their own. Moreover, participants indicated their preference for asking an acquaintance or a relative to be the surrogate mother. Participants could explain their answers in an open-ended format.

In sum, most studies assessed the attitude towards surrogacy in infertile couples without using a validated questionnaire. To exemplify, in Baykal et al. (2008) a single question about the intention to use surrogacy in case of infertility was given. Exceptions are two studies

conducted in Iran (Kian et al., 2014; Rahmani et al., 2011), in which attitude towards multiple facets of surrogacy were covered.

Non-German questionnaires to assess attitude towards surrogacy of fertile participants

Attitude towards surrogacy of fertile couples has been assessed in several countries. Some of the studies developed a questionnaire to exclusively assess the opinion on surrogacy, others assessed the attitude towards several reproductive medicine techniques. In Japan, for a study about attitude towards surrogacy two surveys were conducted (Suzuki et al., 2006). Both included one question concerning surrogacy, asking whether surrogacy should be approved by society. Moreover, the questionnaire included questions concerning demographic data. Among others, attitudes towards surrogacy were compared between age groups and educational levels. On one hand, the focus of the survey on demographic data enabled to compare attitude between different groups and even between two different surveys. To exemplify, the first one conducted in 1999 found that those who disapproved surrogacy were more often female and were more often older than 40 years. In the later one, conducted in 2003, those who disapproved surrogacy were more likely to be above 30 years old and higher educated. On the other hand, due to the focus of the survey on demographic data, it could not be determined what exactly the older participants disapproved about surrogacy and which aspects they might approve. Moreover, the question concerning attitude towards surrogacy is restricted to the case of a medical condition of the woman's womb, which is only a sub-aspect of a more extensive issue. This demonstrates the necessity to assess the attitude towards surrogacy with more than a single question.

In the US, an extensive questionnaire was developed on the attitude towards reproductive medicine techniques, including surrogacy (Holbrook, 1996). After having collected data from 300 social workers on a self-developed questionnaire, a Principal Component Analysis was conducted on the data, resulting in four underlying factors. Among others, questions dealt with rights of participants involved in surrogacy. The factors were named "withholding information" "favouring the non-traditional family" "favouring biological parents over adoptive parents" and "favouring government regulation". In Canada, attitude towards surrogacy was examined by two studies. First, attitude towards commercial surrogacy was examined in Canadian women (Krishnan, 1994) by asking whether participants agree with couples who cannot have children and have other women bear a

child for them, in exchange for money. In addition, several sociodemographic variables as well as fecundity status were assessed. Information on of women's attitude towards other aspects of commercial surrogacy was not gathered. As in the study by Suzuki et al. (2006), the extensive assessment of sociodemographic variables enabled an in-depth analysis of the attitude towards commercial surrogacy between different sociodemographic groups. However, additional information, for example which aspects of commercial surrogacy Canadian women approve or disapprove exactly, could have only been gathered by administering a questionnaire about the attitude towards commercial surrogacy. Second, public attitude towards assisted reproductive technology was studied in Canada via mail survey (Genuis et al., 1993). In a hypothetical scenario, a case of gestational surrogacy was illustrated, in which the reason for having a surrogate mother were time constraints. Thereafter, the participants were asked for their opinion on the scenario. Again, no further questionnaire on participants' attitude towards surrogacy was used.

This scenario was used in a later study in Greece (Chliaoutakis et al., 2002). In this study, a questionnaire consisting of 50 items was developed to assess the attitude towards surrogacy and gamete donation in Greek inhabitants living in an urban area. The final questionnaire was a combination of the existing scenario (Genuis et al., 1993) and the results of a pilot study with open ended questions. It covered several subtopics. First, sociodemographic information was assessed. Second, intention to use surrogacy was examined by several questions. Third, attitude towards surrogacy was assessed by 15 items. On those items a Principal Component Analysis was conducted, which resulted in two underlying factors with a satisfying internal consistency. Lastly, like in Genuis et al. (1993), a case of gestational surrogacy was illustrated, in which the reason for conducting surrogacy were time constraints. Thereafter, participants were asked for their opinion on the scenario. Overall, different aspects on surrogacy were covered by an extensive questionnaire. Various methods were combined in order to collect information on the attitude towards surrogacy.

In the same vein, an attitude towards surrogacy questionnaire was developed for a survey of British women (Poote & van den Akker, 2008) both by adaption of a previous questionnaire (Svanberg et al., 2003) and by adding own items. The questionnaire covered several subtopics, ranging from their own intention to become a surrogate to the consequences of surrogacy.

Moreover, in a study about the attitude towards gestational surrogacy in Iranian fertile women a questionnaire was developed, too (Rahmani et al., 2014). The questionnaire was developed by adapting existing questionnaires and questions considered by the research team as suitable. The final questionnaire consisted of a section related to demographic data, a section related to the maternal history of the women and a section related to the attitude towards surrogacy. The latter one consisted of five subtopics, covering legal and religious issues, conditions for surrogacy, children born through surrogacy, surrogate mother and own intention to conceive a child through surrogacy. Importantly, the questionnaire was developed to be culturally appropriate for the Iran. The test-retest reliability was established by conducting a pilot study.

Concluding, many studies did not develop a questionnaire to assess the attitude towards surrogacy only. In those studies, few questions related to surrogacy itself (Dunn et al., 1988; Genuis et al., 1993; Krishnan, 1994; Suzuki et al., 2006). Instead, those studies focused on demographic data of the participants. In contrast, others developed a questionnaire, sometimes even covering culturally specific topics (Chliaoutakis et al., 2002; Poote & van den Akker, 2008; Rahmani et al., 2014).

Questionnaires to assess attitude towards surrogacy of German population

In Germany, only few studies regarding the public opinion towards surrogacy have been conducted. First, in a study by Stöbel-Richter et al. (2009) the opinion of the German population regarding reproductive medicine and preimplantation genetic diagnosis was assessed. The questionnaire included one question about the permission of surrogate mothering. The question was introduced by a short text informing about surrogacy. Overall, a comprehensive questionnaire assessing the attitude towards controversial reproductive medical techniques - such as surrogate mothering, egg donation and cloning - was developed in this study. Nevertheless, regarding the attitude towards surrogacy, only the aspect of approval of surrogacy in Germany could be assessed.

Second, general attitude towards surrogacy was assessed in Schröder et al. (2004). The authors developed a questionnaire to assess the attitude towards assisted reproduction techniques, including among others egg donation and surrogacy. Its questions relating to surrogacy referred to the intention of the participants to engage in a surrogate procedure, addressing whether participants could imagine being a surrogate mother or using surrogacy themselves as a way to conceive a child. The questions were introduced by a short text

informing about surrogacy. The questionnaire was not statistically validated. Overall, this study found that participants had a rather negative attitude towards surrogacy, however specific reasons for this negative attitude remained unclear.

Third, a report (Wippermann, 2014) about several reproductive medicine techniques found that German participants are hardly considering surrogacy as a possibility for themselves. To exemplify, 6 % of the involuntarily childless women and 10 % of the involuntarily childless men aged 20 to 50 years would consider surrogacy, although most of the participants have heard about the possibility of surrogacy.

Finally, a study in Germany with the topic “the future of the family” included a subsection regarding alternative ways to conceive a child. In this survey, it was both assessed whether participants would accept surrogacy in general, as well as whether participants would consider surrogacy for themselves (<https://www.eltern.de/baby/die-zukunft-der-familie>, study was executed by the panel forsa.omninet).

Concluding, of the previous studies that have been conducted on the public opinion towards surrogacy, only few have established a reliable and validated questionnaire. Instead, several studies focused on demographic data of the participants, thereby being able to investigate which characteristics of the participants might be related to their attitude towards surrogacy. Moreover, up to now, little research has been conducted on the opinion of the German population on surrogacy. A German questionnaire assessing the public opinion towards different aspects of surrogacy is still lacking.

Aim of the study

Thus, the intention of this study was to develop and validate a questionnaire in order to assess the attitude of the German population towards a controversial aspect of reproductive medicine, namely surrogacy.

In contrast to the few studies on opinion towards surrogacy in the German population, this questionnaire aims towards a detailed understanding of the opinion on different aspects of surrogacy, including legal and commercial aspects. Furthermore, the questionnaire aims to assess the attitude towards different parties involved in surrogacy, such as the surrogate mother, the intended parents and the child conceived through surrogacy. At the same time, the aim for this questionnaire was to be general enough to address people with varying horizons of experience, such as people with little knowledge about surrogacy, as well as people who have already performed surrogacy. Moreover, the

aim for this questionnaire is to allow for addressing various groups of interest, such as people who have had their wish for a family already fulfilled as well as people who have an unfulfilled wish for a child.

Method

Measures

A German questionnaire assessing the attitude towards surrogacy of the general public was constructed on the basis of a literature review, previous questionnaires, and a pre-test. First, a literature review was conducted to search for German or English questionnaires assessing the attitude towards surrogacy. Second, German questionnaires assessing attitude towards other topics related to reproductive medicine were reviewed as well. Third, forum discussions and books dealing with people's own experience with surrogacy were reviewed. Then, a pool of items was formulated, covering attitudes towards various aspects of surrogacy.

From the pool of items, 16 relevant items were selected in order to measure attitudes towards surrogacy in general as well as several subtopics. Those items were translated and adapted from the validated English questionnaire from Kian et al. (2014), from Svanberg et al. (2003) and from Rahmani et al. (2014). Moreover, by synthesizing information from the literature review and expert discussions, 13 additional items were constructed. The questions were formulated and adapted to be culturally appropriate for Germany, also regarding the existing laws and practices, as this has been proven to be relevant in previous studies (Kian et al., 2014; Rahmani et al., 2014). The questionnaire was pre-tested with a group of 10 people for comprehensiveness and feasibility before being applied in the study. Based on these results and the comments, the questionnaire was revised.

The final version comprised 29 items which covered opinion on surrogacy in general (7 items), public opinion on surrogacy (3 items), the German law regarding surrogacy (4 items), attitude towards the surrogate mother (7 items), attitude towards the intended parents (3 items), attitude towards the child born through surrogacy (2 items) and the intentional attitude of the participants (3 items). Questions could either be answered on a five-point Likert-type scale ranging from "I totally agree" to "I totally disagree" (20 items) or by yes/no decisions (7 items). Moreover, two items required the participant to complete a numerical value. For most items, a higher score indicated a more positive view of gestational

surrogacy with respect to that item. To prevent acquiescence response bias, some items were reversed.

Design and procedure

An online study was constructed with SoSci Survey (Leiner, 2018), a survey generation website, and was made available to the participants on www.soscisurvey.com. Prior to the attitude towards surrogacy questionnaire, participants' socio-demographic information was collected. Following the questionnaire, participants answered several questions regarding their own family situation, for example if participants had children or whether participants have ever lost a child. Thereafter, participants were given space for comments, further explanations and critique. The online survey could be filled out any time of the day and lasted approximately 20 minutes.

The study was approved by the Ethics Commission of the Faculty of Behavioural and Cultural Studies of the University of Heidelberg. It was emphasized that participation was voluntary, could be discontinued at any time and that data collection would be anonymous. During the whole study, contact information of the study leader was displayed at the bottom of the page.

Participants

In January and February 2018, a total of 553 participants (75.6% identified as female, 24.1% as male, 0.2% as intersex and 0.2% as non-binary) were recruited online. Age ranged from 17 years to 79 years with a mean of 31.92 years and a standard deviation of 8.63 years. Most (94.8%) of the participants were native German speakers and the majority (53.1%) had some university degree. Half of the participants (52.8%) had children and most (77.2%) have not lost a child through miscarriage, early death, abortion, or by giving it up for adoption. While 5.6% knew someone who has pursued a surrogacy arrangement, 4% have pursued a surrogacy arrangement themselves. Table 1 provides an overview of the demographic data of participants. No exclusion criteria existed for the participants. Invitations to participate in the study were distributed via several websites (e.g., Facebook.de, Mamikreisel.de, Babyforum.de, vaeter-in-niedersachsen.de), via E-Mail distributors of several organizations (e.g., LSVD, afg-elkb, Papagen) and via word-of-mouth propaganda. Participants were asked to help develop a questionnaire concerning reproductive medicine. As an incentive to participate, Amazon vouchers were raffled among the participants.

Table 1*Demographic Characteristics of the Sample (N = 553)*

<i>Characteristic</i>	<i>N</i>	<i>%</i>
Gender		
Female	418	75.6
Male	133	24.1
Intersex	1	0.2
Non-Binary	1	0.2
Age	31.93 ¹	8.62 ²
Education		
Still attending school	5	0.9
Secondary school (9–10 years of education)	37	6.7
Vocational training or vocational school (10–12 years of education)	103	18.6
Grammar school qualification (12–13 years of education)	114	20.6
University degree (Bachelor, Master or PhD)	291	52.6
University degree (Professor)	3	0.5
Occupation		
School	5	0.9
Vocational training	11	2.00
Student (Bachelor, Master or PhD)	145	26.3
Employed	278	50.3
Self-employed	29	5.2
Parental leave	45	8.1
Not working (homemaker, child carer or similar)	24	4.3
Pension	4	0.7
Unemployed	6	1.1
Other	5	0.9
Relationship Status		
Single	100	18.1
In a relationship	188	34.0
Married	254	45.9
Other ³	11	2.0
Sexual Orientation		
Heterosexual	459	83.00
Homosexual	66	11.93
Bisexual	22	3.98
Asexual	4	0.72
Others	2	0.36
Children		
Have own children	292	52.8
Have lost a child ⁴	126	22.8
Unfertile	80	14.5
Have pursued a surrogacy arrangement	22	4.0

Note. ¹Mean; ²Standard Deviation; ³Divorced, widowed, or living separated; ⁴Through miscarriage, early death, abortion, or adoption.

Statistical analysis

Statistical analysis was performed using both SPSS software (version 22.0) and R Software (R Core Team, 2017). Data from two participants, whose average time taken to complete the questionnaire was two standard deviations lower than the mean time of all participants, were excluded from analysis. No further data from participants had to be excluded. Missing values were completely at random and concerned only demographic data. Items associated with the questionnaire were free from missing values.

The data obtained were then reviewed to evaluate item range and variance by using descriptive statistics, such as means and standard deviations as well as histograms. As two items required the participants to complete a numerical value, those were excluded from the PCA. Moreover, seven items displayed a restricted range and/or low correlations with all other items. Those seven items were therefore excluded from further analysis. Thus, 20 items remained for the PCA calculations.

To extract a preliminary factor structure, PCA was conducted. The PCA was chosen for two main reasons: firstly, in an effort to find the linear component which exist within the data and secondly, in order to reduce the large number of variables.

The present sample met the requirements for a PCA. First, the sample consist of 553 participants, which exceeds the sample size recommendation of at least 300 participants (Tabachnick & Fidell, 2007). Second, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated and results (KMO = 0.92) verified that the factor analysis should yield distinct and reliable factors (Kaiser, 1974). All KMO values for individual items were greater than .76, which is above the limit of .5 (Field, 2013). Third, Bartlett's test indicates whether the correlation matrix is significantly different from an identity matrix. Results show that intercorrelations were high enough. The anti-image matrix of correlations demonstrated sampling adequacy for each variable and each pair of variables.

A PCA for factor extraction was conducted on the remaining 20 items, which was followed by an oblique rotation (direct oblimin), as the underlying dimensions were not expected to be completely independent (Moosbrugger & Schermelleh-Engel, 2012). To determine the number of factors, the Kaiser-Guttman criterion (including all factors with an eigenvalue bigger than one (Bortz & Schuster, 2010)) and the scree plot (Bortz & Schuster, 2010) were used. As some items were dichotomous, a second PCA was conducted with R, using the tetrachoric and polychoric correlations as a starting point for a sequence of factor

analysis. Thereafter, results of the factor analyses with SPSS and with R were compared (for an in-depth comparison of the results, see supplementary material). Comparison of both calculations revealed similar results, which indicated to us that the SPSS calculations had provided meaningful results. Therefore, the following description of the results is based on the SPSS calculations.

Results

The final solution was a three factor solution, with all factors having a meaningful theoretical content. SPSS and R supplied a very similar solution. For both programmes, the criteria Eigenvalues greater than 1 and the scree plot suggested a four factor solution at first. However, the fourth factor, which included items related to the attitude towards children born through surrogacy, displayed a relatively low reliability of its items (Cronbach's $\alpha = .43$). Therefore, items of factor four were dropped from further analysis. After reviewing loadings and content of items of factor one and calculating a Cronbach-Mesbah Curve, reliability of factor one could further be improved by dropping five items with loadings lower than .66. Afterwards, for the 13 items a three factor solution was suggested by the criteria Eigenvalue greater than 1 and the scree plot. Moreover, on a theoretical level, all three factors displayed meaningful content. Factor loadings were all greater than .70 and the communalities of items ranged from .53 to .86. The Corrected Item-Total Correlation verifies that all items correlate well with the scale overall (all $> .39$, which is above the limit of .3, Field (2013)).

Thus, the final questionnaire consisted of 13 items and the variance explained was 71.34%. Items loading on factor one mostly aim at whether participants could imagine surrogacy for themselves or others and what they think about the concept of surrogacy in general. Consequently, factor 1 was named "attitude towards surrogacy in general". Items loading on factor two both ask for the opinion on paying the surrogate mother for the surrogacy arrangement. Consequently, factor 2 was named "attitude towards monetary compensation". Items loading on factor three both relate to the rights surrogate mothers should have within the surrogacy arrangement. Consequently, factor 3 was named "attitude towards surrogate mothers". Cronbach's alpha was used to calculate reliability of the scales and was .94, .67 and .84 respectively for each factor.

In sum, the final factor solution met the following criteria: First, the factors were internally consistent and well defined by the relevant items. Second, factor extraction was

based on an Eigenvalue greater than 2.5. Third, items displayed a communality of at least 0.53. Forth, only items with a factor loading of at least 0.70 were included. Fifth, items loaded on other factors with .18 or below. Table 2 displays the factor loadings and the percentage of variance of each factor after rotation.

Table 2*Item loadings of the Principal Component Analysis*

	Items	Factors		
		1	2	3
<i>General attitude towards surrogacy</i>				
1	If me and/or my partner could not conceive a child on our own, I would consider surrogacy	.90		
2	A befriended couple cannot have children on their own. Would you advise them on conceiving a child through surrogacy?	.87		
3	What is your general opinion on surrogacy	.85		
4	If one of my relatives or friends decided to pursue a surrogacy arrangement, I would support them	.83		
5	I would prefer to be voluntarily childless rather than to pursue a surrogacy arrangement	-.82		
6	The concept of surrogacy does not harm any ethical principles	.78		
7	Surrogacy is a good way to help infertile couples to have a child with their own genetic characteristics	.77		
8	A good friend of yours wants to conceive a child through surrogacy, which is illegal in Germany. Would you advise her on pursuing a surrogacy arrangement abroad?	.73		
9	I would prefer to adopt child rather than to pursue a surrogacy arrangement	-.70		
<i>Attitude towards monetary compensation</i>				
10	If surrogacy would be legalised in Germany, would you support a monetary compensation for surrogate mothers?		.93	
11	A friend considers becoming a surrogate mother. Would you advise her to ask for a monetary compensation?		.91	
<i>Attitude towards surrogate mothers</i>				
12	After giving birth, the surrogate mother should have the right to see the child regularly			.94
13	After giving birth, a surrogate mother should have the right to decide if she really wants to give the child away			.74
% of variance explained		51.9	10.5	9.0
Cronbachs Alpha		.94	.84	.67

Note. Only factor loadings exceeding .30 are displayed in the table; Total explained variance is 71.34 %

Discussion

With the aim of developing a German questionnaire to assess the attitude towards surrogacy of the general public, the present study found a total of 13 relevant items which can be classified into three factors. Those factors can be described as “general attitude towards surrogacy” (factor 1), “attitude towards monetary compensation” (factor 2) and “attitude towards the surrogate mother” (factor 3). The “general attitude towards surrogacy” factor includes, among others, questions about the intended parents, about own intentions and about legal issues.

Prior to this study, to our knowledge, no validated German questionnaire assessing surrogacy existed. Generally, little research has been done on the opinion of the German population on surrogacy. Moreover, in those studies which have been conducted, surrogacy has not been the sole topic, resulting in too few questions to sufficiently capture the different aspects of surrogacy. In order to add to the studies which assessed attitude towards surrogacy in Germany by including one question (Stöbel-Richter et al., 2009) or few questions (Schröder et al., 2004) about surrogacy to their questionnaire, the current study developed a tool for the in-depth assessment of attitude towards surrogacy.

In comparison to the existing questionnaires about surrogacy (Chliaoutakis et al., 2002; Kian et al., 2014; Poote & van den Akker, 2008; Rahmani et al., 2014), this questionnaire is available in German and adapted to be cultural-specific. Similar to Chliaoutakis et al. (2002), questions were translated and adapted from previous questionnaires and additionally, culturally appropriate items were added to ensure the applicability of the questionnaire to the German population.

The present questionnaire was developed by concentrating on statistical validity and reliability of the questionnaire. This is only comparable to few existing questionnaires about surrogacy. The present statistical approach to create a valid questionnaire is similar to the methodology of both Chliaoutakis et al. (2002) and Holbrook (1996), in which a PCA was conducted on a pool of items, too. However, most of the previous studies chose other methods. To exemplify, while the current study developed subscales by calculating a PCA, Kian et al. (2014) developed subscales on the basis of a literature review and an expert panel and Poote and van den Akker (2008) developed a questionnaire using questions of previous questionnaires and the Theory of Planned Behaviour. In the current study, Cronbach’s alpha was used as a reliability measurement, like it has been in various other studies (Chliaoutakis

et al., 2002; Kian et al., 2014; Rahmani et al., 2014). Furthermore, in the same way as most studies (Chliaoutakis et al., 2002; Poote & van den Akker, 2008; Rahmani et al., 2014), for the item scoring, the present study used a Likert Scale. This has been proven to be a well-established method of capturing the opinion of participants.

The content of the items of this study was global and covered topics which related to surrogacy only. This differs from the content of the items developed by Chliaoutakis et al. (2002) in the way that Chliaoutakis et al. (2002) only measured the motivational patterns that lead the participants to use surrogacy or gamete donation. However, the range of topics covered by the questions of the present study is comparable to Rahmani et al. (2014), Kian et al. (2014) and Poote and van den Akker (2008).

With respect to the target group, previous questionnaires have mostly been developed either for fertile or for infertile participants only. However, in the same way as Chliaoutakis et al. (2002), the questionnaire of the current study was administered to fertile and infertile participants and was developed to be applicable to both groups. By recruiting participants online, the study had a relatively wide range and was not restricted to a specific area, whereas previous studies recruited in certain hospitals (Kian et al., 2014; Rahmani et al., 2014) or in an urban area (Chliaoutakis et al., 2002).

Strength

In this study emphasis was put on statistical tools for the development of reliable and valid scales for a German questionnaire to assess attitude towards surrogacy. PCA and Cronbach's alpha was calculated with both SPSS and R. This careful statistical validation process distinguishes the present study from previous ones. Moreover, the questionnaire can easily be applied in other studies. First, it meets the time constraints of most studies, as the duration to complete the questionnaire is 10 to 15 minutes. Second, it can be answered by participants without direct contact to the researcher, as it consists of self-report scales. This enables the recruitment of participants independently from a certain location.

The current study contained a high number of participants, including people with a wish for a child, people who do not plan to have children and people who already have children. Moreover, people with different sexual orientations were included, as depending on the kind of partnership people are in, it can be easier or harder to conceive a biologically related child. Finally, the range of age was high in the current sample, ranging from 17 to the

age of 79. This is relevant, as previous studies have shown an effect of age on the attitude towards reproductive medicine techniques (Suzuki et al., 2006).

The authors hope that this research will contribute to a deeper understanding of surrogacy by developing a tool to assess the opinion of the German population towards surrogacy. Moreover, by doing so, the study might draw attention to the necessity to inform the population more about the topic of surrogacy. Finally, the authors believe that this topic is too complex to be assessed with few questions. It is hoped that by creating this questionnaire, barriers to initiate a detailed assessment of the German population's opinion on the various aspects of surrogacy could be lowered. By doing so, a nuanced picture of the opinion on surrogacy would be enabled.

Limitations

The generalizability of the sample is subject to certain limitations. For instance, as the present study was an online study, only people with access to the internet were able to participate. Furthermore, a large group of participants was sampled through specific websites (e.g., Facebook.de, mamikreisel.de), therefore participants using those websites are overrepresented. Even though age had a high range, people of older age were underrepresented, which is probably due to the nature of an online study. Moreover, distribution of gender was not even. However, a higher rate of female participants is not unusual for a study dealing with reproductive medicine as the results of several studies exemplify (Genuis et al., 1993; Schick et al., 2017; Svanberg et al., 2003). Half of the participants have a university degree; thus, academics are overrepresented in the sample. Finally, future research should conduct a Confirmatory Factor Analysis to confirm the present results.

Practical Relevance

This is the first German questionnaire with which the opinion towards different aspects of surrogacy can be assessed. In the debate about surrogacy, so far, the population has been shaped by few and often emotional media reports. An objective discussion of surrogacy has seldom been possible. Avoiding discussions about surrogacy has led to couples evading to other countries to perform a surrogate procedure, sometimes being ill informed about the consequences. In light of this, it is more important than ever to capture the opinion of the German population towards this topic.

The questionnaire enables to capture the opinion of the German population towards several aspects of surrogacy, including the general opinion, opinion towards the surrogate mother, towards the intended parents, own intentions, legal aspects, as well as towards monetary compensation of the surrogate. Thus, it can be investigated whether people might have a positive opinion on some aspects of surrogacy, while they have a negative opinion on other aspects of surrogacy. Only an excessive questionnaire as the present one enables that. Moreover, people's opinion towards monetary compensation is especially relevant, because currently, some countries allow a monetary compensation for surrogate mothers, while in other countries it is illegal to pay the surrogate mother to inhibit commercialization of surrogacy. Table 3 provides an overview of the items of the questionnaire, including a German translation.

In addition to covering diverse aspects of surrogacy, the questionnaire enables the assessment of different groups in the population, which is important for politics as well as for medicine. To exemplify, demographic characteristics as age, gender or fertility could influence people's opinion about surrogacy. The present questionnaire is eligible for all of those groups.

Finally, this questionnaire can be utilized to assess how different terms of the concept of surrogacy might influence the opinion of the population towards this topic. This question is planned for a follow-up study. As many people have hardly any information about surrogacy, the outcome might hint on how people tend to form their opinion about topics they are uninformed about.

Table 3

Items of the Questionnaire

	Item	German translation
	<i>General opinion</i>	
1	If me and/or my partner could not conceive a child on our own, I would consider surrogacy	Wenn ich mit meinem/meiner Partner/in keine Kinder bekommen könnte, würde ich in Erwägung ziehen, eine Leihmutter in Anspruch zu nehmen.
2	A befriended couple with a desire for a child cannot have children on their own. Would you advise them on conceiving a child through surrogacy?	Ein befreundetes Paar von Ihnen mit großem Kinderwunsch kann keine Kinder austragen. Würden Sie ihnen dazu raten, die Möglichkeit einer Leihmutterchaft in Anspruch zu nehmen?

- 2.1¹ If this couple (still) wants to conceive a child through surrogacy, what would you advise them on paying the surrogate? Wenn dieses Paar (dennoch) eine Leihmutter in Anspruch nehmen möchte, was würden Sie ihnen raten, wie viel sie maximal an die Leihmutter zahlen sollen?
- 3 My general opinion on surrogacy is positive Meine Meinung zu dem Konzept der Leihmutterschaft ist grundsätzlich positiv
- 4 If one of my relatives or friends decided to pursue a surrogacy arrangement, I would support them Wenn einer meiner Verwandten oder Freunde eine Leihmutter beauftragen würde, würde ich das unterstützen.
- 5 I would prefer to be voluntarily childless rather than to pursue a surrogacy arrangement Ich würde lieber kinderlos bleiben als eine Leihmutter zu beauftragen.
- 6 The concept of surrogacy does not harm any ethical principles Ethisch gesehen finde ich das Konzept der Leihmutterschaft unbedenklich
- 7 Surrogacy is a good way to help infertile couples to have a child with their own genetic characteristics Leihmutterschaft ist eine gute Option für unfruchtbare Paare, ein Kind mit ihren genetischen Verbindungen zu bekommen.
- 8 A good friend of yours wants to conceive a child through surrogacy, which is illegal in Germany. Would you advise her on pursuing a surrogacy arrangement abroad? Eine gute Freundin von Ihnen möchte eine Leihmutter beauftragen. In Deutschland ist das rechtlich nicht erlaubt. Würden Sie ihr dazu raten, ins Ausland auszuweichen?
- 9 I would prefer to adopt child rather than to pursue a surrogacy arrangement Ich würde lieber ein Kind adoptieren als eine Leihmutter zu beauftragen.
- Attitude towards monetary compensation*
- 10 If surrogacy would be legalised in Germany, would you support a monetary compensation for surrogate mothers? Wenn Leihmutterschaft in Deutschland legalisiert werden würde, würden Sie befürworten, dass den Leihmüttern Geld gezahlt wird?
- 11 A friend considers becoming a surrogate mother. Would you advise her to ask for a monetary compensation? Eine Freundin überlegt sich, Leihmutter zu werden. Würden Sie ihr raten, sich dafür bezahlen zu lassen?
- 11.1¹ If this friend (still) wants to ask for a monetary compensation, what amount do you think it should be? Wenn diese Freundin sich (dennoch) bezahlen lassen würde, wie viel sollte das Ihrer Meinung nach sein?
- Attitude towards surrogate mothers*
- 12 After giving birth, the surrogate mother should have the right to see the child regularly Eine Leihmutter sollte das Recht haben, das Kind nach der Geburt regelmäßig zu sehen.
- 13 After giving birth, a surrogate mother should have the right to decide if she really wants to give the child away Eine Leihmutter sollte das Recht haben, sich erst nach der Geburt zu entscheiden, ob sie das Kind tatsächlich weggeben möchte.

Note. ¹This question was not part of the Principal Component Analysis.

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Appendix 2

Manuscript 2: Mohnke, M., Christmann, U., Roos, Y., & Thomale, C. (2022). Do Metaphors Make Opinions? An Empirical Study on the Effect of Metaphorical Framing on the Opinion on Surrogacy. *Metaphor and the Social World*, 12(1), 92-114.

Do Metaphors make Opinions? An Empirical Study on the Effect of Metaphorical Framing on the Opinion on Surrogacy

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Abstract

Introduction: A frame makes specific information about a topic more salient. Metaphors can be used as frames to influence people's opinions on controversial political topics as well as on health-related topics. This study aims to determine the influence of metaphorical frames on the opinion towards surrogacy and examines whether specific aspects of surrogacy are more prone to the influence than others.

Method: 236 participants were assigned to one of three groups with different metaphorical frames for surrogacy and thereafter completed the Attitude Towards Surrogacy Questionnaire. To investigate if participants' opinions on surrogacy were influenced by the frame used for surrogacy, three ANOVAS were conducted.

Results: The main effect of the ANOVAS revealed that opinion towards payment of the surrogate mothers, but not the attitude towards surrogacy in general, was influenced by the metaphorical frame used for surrogacy.

Discussion: The results support the idea that a metaphorical frame can evoke reactance regarding the payment of surrogate mothers. Participants might resist the frame of the metaphorical term for surrogacy as an unemotional business act, by favouring less monetary compensation of the surrogate mother, when the metaphorical frame implies that surrogates only help intended parents for the monetary compensation.

Keywords: Metaphorical framing, opinion, language, surrogacy, politics

Do Metaphors make Opinions? An Empirical Study on the Effect of Metaphorical Framing on the Opinion on Surrogacy

What if our opinion on a whole topic was influenced by a single metaphor? Would people take advantage of that? In fact, those who want to influence a large crowd, as in advertising and politics, have been using the effect of metaphors for years (Boeynaems et al., 2017). Metaphorical expressions are present in our everyday language and have been found to influence people's attitude (Charteris-Black, 2006; Parrott & Smith, 2014).

This study aims to contribute to this growing area of research by exploring the effect of metaphorical expressions in the context of surrogacy, a topic highly discussed in politics and medicine. The specific objective of this study was 1) to examine whether the public opinion on surrogacy can be influenced by metaphorical expressions; 2) to establish whether specific aspects of surrogacy are more prone to the influence of metaphors than others; 3) to identify demographic variables which mediate the influence of metaphorical expressions in surrogacy, if any. In Germany, many people are unfamiliar with the concept of surrogacy: They are unsure about the exact procedure of surrogacy or do not know if surrogacy is legal under German law (Mohnke et al., 2019). In the German language, several terms for surrogacy exist and each of these terms has a different metaphorical implication. The present study will take advantage of that by comparing the metaphorical framing effect elicited by those terms. Whether different metaphorical terms for one concept influence the opinion of people towards this concept in different ways will then be assessed.

Metaphors as Frames

Scholars have long debated the mechanisms of metaphors. Major theoretical contributions include the comparison view (Aristotle, described in Taverniers, 2002), the anomaly view and the interaction view (Black, 1979). Those theories complement each other and have inspired new theories that combine the above-mentioned theories (Christmann & Scheele, 2001). One well-known theory is the domain-interaction theory (Tourangeau & Sternberg, 1982), according to which metaphor comprehension takes place by seeing a concept from one domain in terms of a concept from another domain. This happens as the goal domain and the source domain interact and the cognitive structure of the source domain is transferred onto the goal domain.

Metaphors can fulfil functions of framing, as emphasizing a problem, a moral viewpoint, or a solution (Burgers et al., 2016; Semino et al., 2018). Accordingly, a frame

often makes specific information about a topic more salient (Entman, 1993). An increase in salience of a particular aspect means that it is highlighted, leading to more acknowledgement as well as memorability. Certain associations, inferences, emotions and values are primed by frames, others are suppressed. Although the majority of the framing literature is focused on non-metaphorical concepts, a small but influential and growing separate research area initiated by Lakoff and Johnson (1980) and empirically substantiated by Robins (Robins, 1996; Robins & Mayer, 2000) has developed (see Christmann, 2020).

Framing effects of metaphors are currently investigated from several perspectives (Semino et al., 2018): First, the cognitive perspective (Lakoff & Johnson, 1980), which underlines the role of metaphors in thinking and political opinion making (Flusberg, 2017). Second, the discourse perspective (Semino et al., 2018), which focuses on the function and on the effect of metaphors in daily use and third, the practical perspective (Reisfield & Wilson, 2004), which aims to find recommendations for metaphorical communication for practitioners. Finally, there is the emotional perspective (Hendricks et al., & Boroditsky, 2018; Kühne & Schemer, 2015), which explains how frames can influence information processing, judgments, and intentions by eliciting emotions. The current study will follow the cognitive perspective, assessing the role of metaphorical framing while forming an opinion. A combination of the cognitive and the discourse perspective was investigated in several studies, which showed that the application of different metaphorical frames for one topic can lead to distinctive opinions, reasoning and action of people regarding that topic. Examples will be given in the following sections.

Current Research on the Effect of Metaphorical Framing

Several studies have investigated the effects of metaphorical frames on individuals' reasoning (Sopory & Dillard, 2002). For instance, the attempts of people solving problems were shaped by metaphorical expressions (Robins & Mayer, 2000). Moreover, a relationship metaphorically framed as a unity leads to more perceived threat by interpersonal conflicts than a relationship metaphorically framed as a journey, with its ups and downs (Lee & Schwarz, 2014). Thus, as metaphors emphasize a moral viewpoint and carry knowledge from other mental spaces, previous findings point to a high potential of metaphors and frames to shape interpretation in our everyday language.

In the health sector, the influence of metaphorical framing on people's beliefs has also been demonstrated. To illustrate, metaphors pervade language about cancer and shape

how we think about it: In a study on metaphors' influence on cancer prevention intentions, participants who read about cancer prevention framed as "fight against developing cancer" - compared to participants who received a more neutral frame - reported less intention to limit their own behaviours, e.g., reduce their consumption of red meat (Hauser & Schwarz, 2015). The authors expanded on their work by showing that, compared to a neutral framing, framing cancer treatment as a battle increased the perception of the cancer treatment's difficulty and that people who read about cancer framed as a battle had more fatalistic beliefs about cancer than participants who read about cancer framed as a journey (Hauser & Schwarz, 2019). However, to our knowledge, up to date, only Hendricks et al. (2018) have studied the view of participants on another group of people within the medical field. In a series of experiments, if cancer was framed as a battle rather than as a journey, participants believed fictional characters to feel more guilty if they were not able to recover from their illness. This demonstrates the powerful influence of framing on people's inferences about others. The present study will add to that scarce research of metaphor framing on group perception, by assessing the influence of framing on participants' view towards surrogates. However, surrogacy is not solely a medical topic, as it is controversially debated in politics all around the world.

With that in mind, it is important to notice that metaphors can also be utilized to influence opinions on other topics, which are highly controversial, as in politics. Metaphors are frequently used in politics and are thought to be effective persuasive tools (Mio, 1997). To demonstrate, it was found that participants' views towards crime were shaped by metaphorical expressions. Depending on the metaphorical frame, participants preferred different strategies to cope with crime (Christmann & Göhring, 2016; Thibodeau & Boroditsky, 2011). To take another, even more controversial topic, in a study looking at real-world changes as a result of metaphorical framing the metaphor of war was found to structure the way we think about terrorism (Bartolucci, 2012) and was found to influence people's opinions of foreign affairs, for instance trade (Robins & Mayer, 2000) and diplomacy (Ismael & Ismael, 1999). Interestingly, even attitudes towards a political party can be influenced by framing. In a study about the persuasive effect of political metaphors (Bosman, 1987), a metaphor was used to frame the description of a political party, which influenced people's attitude toward it.

Within the field of politics, a few studies have dealt with the role of metaphors in a political issue involving an (out-) group of people. For example, some have studied the role of metaphorical framing in people's tolerance towards refugees or towards migrants. This was mostly done by analysing real-world changes as a result of metaphorical framing. Among others, findings were that in 1999, the public perception in California was dehumanising immigrant workers (Ana, 1999) or that political campaigns using container metaphors when talking about immigration policy heightens emotional fears associated with the penetration of a container (Charteris-Black, 2006).

Outside the field of politics, a recent study has dealt with the influence of metaphors on the perception and judgement of a group of people. In a study about the metaphoric influence on people's judgement on ideas and on people who have the ideas, Elmore and Luna-Lucero (2017) compared the effect of an idea being metaphorically phrased as a light bulb turning on or as a seed taking root. They found that the perceived genius of a female inventor increased when her idea was framed as a seed, which may be driven by the incongruence of the light bulb metaphor with the female stereotype and the congruence of the seed metaphor with the stereotype of feminine activities such as caring and nurturing. All in all, there is some evidence that metaphorical framing can influence people's judgement towards a specific group. However, only few studies have dealt with the role of metaphorical framing in a political issue involving a group of people, to which the current study will add by looking at the role of metaphorical framing in people's judgements about surrogates.

Taken together, because metaphors can be used as frames to influence people's opinions on controversial political topics as well as their opinions on health-related topics, it might be possible for metaphorical expressions to also influence people's opinions on surrogacy. Surrogacy is a controversial political and health-related topic and policy regarding surrogacy varies between countries. It is important to understand why political decisions and public opinion vary between countries and what factors might influence those decisions. To further explore this question, the influence of metaphorical language on the opinion towards surrogacy will be assessed in this study by varying the terms used for surrogacy in a factual description of it, while keeping the remainder of the description constant.

Current Study

This study aims to determine if there is an influence of metaphorical expressions on the opinion towards surrogacy. To compare the effect of metaphorical expressions, different metaphorical expressions within the field of surrogacy were chosen. In Germany, there are several terms for surrogacy and surrogate mother. First, "*Leihmutter* or *Leihmutterschaft* is the most commonly used term in Germany, translated literally as "mother to lend". Second, *Mietmutter* or *Mietmutterschaft* is less common, but suggested by Thomale (2015) and is literally translated as "mother to rent". Third, *Ersatzmutter* or *Ersatzmutterschaft* is the official German term for surrogacy in Germany, which is used in legal guidelines (e.g., §13a AdVerMiG; Ersatzmutter) and is literally translated as "substitute mother". The main semantic difference of the three metaphorical frames is linked to money: *Mieten* 'to rent' almost exclusively refers to paying money to use a product or service for a certain amount of time. In contrast to that, *leihen* 'to lend' can be either with or without monetary compensation, depending on context (e.g., lending from a friend vs. lending money from a bank). However, the term is mainly understood as providing something without monetary compensation. Out of the three metaphorical frames, the German term *Ersatz* 'substitute' is least connected to any monetary aspects and might be considered the most neutral term. We conceive these terms for surrogacy as metaphorical. But are these terms really metaphors? Judged from everyday language, they might appear metaphorical only at a second glance. From a linguistic and rhetorical point of view they can be reconstructed as metaphorical because some aspects from one area (the vehicle: *rent* and *lend*), are conveyed onto the structure of another area (the topic: *mother*) where they serve as an interpretation strategy (see the popular interaction theory of metaphor: Black, 1979; Richards, 1936). *Mother* is seen from an unusual angle, namely as something to rent or to borrow. But even if the expressions are understood literally (and count as so-called dead metaphors) they can still be reconstructed and understood as metaphorical in a specific context of usage according to the pragmatic theory of metaphor (Searle, 1979). The same is true for classical dead metaphors such as *skyscraper*, *bottleneck*, or *flood of information*, which are lexicalized by frequent use (Friedrich, 2013). The core problem is that the literature contains many metaphor theories, but no clear and unambiguous criteria for the existence of a metaphor (Cacciari & Glucksberg, 1994; Groeben & Christmann, 2003).

Against this background we will test whether the terms have an effect on the opinions of the study participants towards the topic of surrogacy in general. Moreover, it will

be assessed whether the metaphorical terms affect participants' attitude towards monetary compensation of surrogates. And finally, the study will also show whether different metaphorical terms might influence participants' opinions towards surrogate mothers. When understanding a metaphor, a concept (e.g., MOTHER) is seen in the light of another concept (e.g., RENT). This means that features, attributes and structures are transferred from a source to a target domain (e.g., conceptualization theory of metaphor; Lakoff & Johnson, 1980). In this way, metaphors function as frames which guide our interpretation of the world by highlighting specific aspects of a concept and hiding or suppressing others (Entman, 1993).

In our study, we hypothesise that the structure of the domain surrogacy will be reinterpreted by the metaphorical frame. Different frames for surrogacy will highlight different aspects about the topic surrogacy and will thereby - in line with the domain-interaction view (Tourangeau & Sternberg, 1982) - activate different associations on the topic of surrogacy. To illustrate, the different frames for surrogacy will probably activate different associations with money. It is expected that the most popular German word for surrogate mother, *Leihmutter* 'mother to lend', activates the frame of lending or borrowing, including giving something back, or possibly not being charged.¹ Likewise, it is expected that *Mietmutter* 'mother to rent', activates the frame of "renting", which always includes paying money. Moreover, renting is more official than lending and is usually used for larger objects like cars or houses. The third German word for surrogate mother, *Ersatzmutter* 'substitute mother', suggests a replacement and has no negative connotations. This frame might be the most neutral one with regard to money.

The current study mainly investigates the cognitive perspective, which underlines the role of metaphors in concepts of thought. We assume that certain values are primed by those frames, while others are suppressed. As a consequence, different values will be primed for every metaphorical term. To test this hypothesis, we assess the influence of the frames on the opinion towards surrogacy in general, the opinion towards surrogates and towards monetary compensation of the surrogates. The frame "mother to rent" activates associations with monetary compensation, which will lead the evaluation of money-relevant

¹ Note that with regard to remuneration in German law the interpretation is even stricter than in colloquial language: *Leihe*, as contained in *Leih-mutter*, has the meaning of a gratuitous contract, by which one party allows another the use of a chosen item free of charge (§ 598 BGB).

information in line with one's schema for surrogacy. We hypothesise that in comparison to the frames "mother to lend" and "substitute mother", participants with the frame "mother to rent" will display a more negative view towards surrogacy in general but also with regard to the surrogates themselves. Our hypothesis is based on two theoretical considerations: First, the frame "mother to rent" will frame surrogacy in terms of women's womb being rented, an idea which participants might find incompatible with their view of motherhood. This could especially affect participants' views on surrogacy in general, and one may assume that even sympathy with the surrogate could be evoked. However, secondly, because of the general expectation in society of women to carry out most of the unpaid work, including household tasks, emotional work and especially childbearing and child-raising (Elson, 2017; Wheatley et al., 2018), we expect that priming participants with the idea that some women expect money for this kind of work will also lead to a more unappealing view of surrogates themselves. In line with that, we hypothesise that the frame "mother to rent" will lead to reactance when it comes to monetary compensation: We expect participants with this frame to be less in favour of monetary compensation than participants with the other frames. Moreover, comparing the influence of the metaphorical frames on surrogacy, surrogates and monetary compensation, we expect the influence of the frames on monetary compensation to be the strongest, as the implications of the frames largely differ with regard to whether or not remuneration of the surrogate is implied.

To summarize, our hypotheses are: 1) People's opinion on surrogacy can be influenced by the metaphorical term used, 2) the influence of the frames on monetary compensation is stronger than the influence on surrogacy or surrogates, and 3) participants who were allocated to the frame "mother to rent" will afterwards display the most negative opinions towards surrogacy, surrogates and monetary compensation.

Surrogacy is a global public health concern. It is a topic relevant to politicians, practitioners and the public. Because surrogacy falls in the field of reproductive medicine, as well as politics and law, an interdisciplinary approach was taken for the study, including researchers from the field of psychology as well as law.

Method

Design and Procedure

Assessment of data was conducted online with SoSci Survey, a survey generation website.² The study was approved by the Ethics Commission of the Faculty of Behavioural and Cultural Studies of the University of Heidelberg. Once the participant had accessed the link, it was emphasised that participation was voluntary, could be discontinued at any time and that data collection would be anonymous. A description of the study and contact details of the study leader were given. Informed consent was obtained. Participants were assigned to one of three versions of the informative text, which differed with regard to the used metaphorical terms for surrogacy. Version 1 of the text used *Leihmutter* 'mother to lend', version 2 used *Mietmutter* 'mother to rent' and version 3 used *Erstatzmutter* 'substitute mother'. All three terms are official German words for surrogacy. For further description of the text and the metaphorical terms see section 2.2.1. The process of the study was structured as follows: First, participants' provided sociodemographic information. Then, participants pre-existing knowledge of surrogacy was assessed. Thereafter, participants were instructed to carefully read one of the three versions of an informative text about surrogacy, which differed with regard to the metaphorical term used, and were asked to answer questions regarding the text to ensure their attention during reading. Following the informative text and the questions, participants completed the Attitude Towards Surrogacy Questionnaire. Finally, participants' situation regarding their own children was assessed. At the end, contact information of the study leader was given again, as well as space for comments or critique. The study lasted approximately 15 minutes and could be filled out any time.

Measures

Informative Text and Metaphorical Frames

To test our hypotheses, we constructed an informative test, including a brief introduction of the basic principles of surrogacy and information regarding the legal issues of surrogacy in Germany. The text consisted of 182 words. Three different versions of the text were prepared, in each of which a different frame for surrogacy was used. First, the most commonly used one is *Leihmutter* 'mother to lend', this term is mostly used by the media. Second, *Mietmutter* 'mother to rent' is suggested by Thomale (2015). Third, *Erstatzmutter*

² www.soscisurvey.com

'substitute mother' is officially used for surrogacy, especially within the field of law. In each version, 11 of the 182 words were supposed to activate the metaphorical frame. Five of those words were identical repetitions of the metaphorical frames for the surrogate or surrogacy, six were identical repetitions of the corresponding frame-related nouns for the concept "intended parents", which was part of the informative text. For *Mietmutter* 'mother to rent', the corresponding German frame-related noun is *Wunscheltern* 'desiring parents'. For *Leihmutter* 'mother to lend', the corresponding German frame-related noun is *Bestelleltern* 'ordering parents'. For *Erstatzmutter* 'substitute mother' the corresponding German frame-related noun is *Soziale Eltern* 'social parents'. These terms can be considered as a kind of extensions of the original metaphors (Thibodeau, 2016).

The main semantic difference of the three metaphorical frames is linked to money, as explained in detail in section 1.3. In the current study, 100% of the participants answered the question "How do you define renting?" with "One party allows another the use of a chosen item against remuneration". By contrast, *leihen* 'to lend' is mainly understood as providing something without monetary compensation. In line with that, 93% of the participants in the present study answered the question "How do you define lending" with "One party allows another the use of an item free of charge". The German term *Ersatz* 'substitute' might be considered the most neutral term. When asked for a definition, most (80%) of the participants in the present study answered with "Taking the place of somebody without monetary compensation" (as opposed to "against remuneration").

The texts were checked for potentially confounding metaphors with the MIP method, a method for identifying metaphorically used words (Pragglejaz Group, 2007). Thereafter, potentially confounding metaphors were removed or substituted with non-metaphorical alternatives.

A full version of the informative text 1 is given below. The five repetitions of the metaphorical frames for the surrogate or surrogacy are written in italics, the six corresponding frame-related nouns are underlined. The metaphorical frames of versions 2 and 3 are written in brackets. The original German version is in the appendix.

Instructions were: "In the following, we present a text about reproductive medicine. Please read the text carefully. After that, please answer some questions about the text."

Informative text (English version)

Some couples who cannot conceive children, use the method of *motherhood to lend* (*motherhood to rent / substitute motherhood*). These couples are called desiring parents (ordering parents / social parents). One possibility is to implant a fertilized egg, which contains the genetic material of the desiring parents (ordering parents / social parents) into another woman. Hence, this woman, called *mother to lend* (*mother to rent / substitute mother*), carries a child who is not biologically related to her on behalf of the desiring parents (ordering parents / social parents).

However, since *motherhood to lend* (*motherhood to rent/ substitute motherhood*) is banned in many countries, such as Germany and Switzerland, an increasing number of desiring parents (ordering parents / social parents) look for *mothers to lend* (*mothers to rent / substitute mothers*) in countries, where this is still an option. This can lead to numerous legal problems, especially with regard to legal parenthood and the nationality of the child. Legally, in Germany, the woman who conceives and gives birth is considered the mother of the child. In practice, *motherhood to lend* (*motherhood to rent/ substitute motherhood*) is particularly noticeable when the desiring parents (ordering parents / social parents) want to return to their home country with the child born abroad and want to apply for a passport or identity card for the child. Then the question frequently arises whether the desiring parents (ordering parents / social parents) are the legal parents of the child, because the nationality of the child depends on this, at least under German law.

Attitude Towards Surrogacy Questionnaire

To assess the attitude towards surrogacy, a validated questionnaire was used (Mohnke et al., 2019). The questionnaire consists of 13 items, divided in three subscales: “attitude towards surrogacy in general”, “attitude towards monetary compensation” and “attitude towards surrogate mothers”. The 13 items of the questionnaire were combined to a single measure for each of those three subscales for further analyses (Costello & Osborne, 2005). Some of the items of the questionnaire were reversed to ensure that low scores always implied a positive response, that is a score which was previously 1 became 5 etc. For further details of the questionnaire and the validation process see Mohnke et al. (2019). In addition, we added questions concerning the informative text, to ensure that participants read the text attentively.

Participants

Data from participants were gathered online from June and August in 2018 (n = 236, 72% female and 28% male). Participants' age ranged from 17 to 63 with a mean of 28 and a standard deviation of 10. 68% (n =159) of the participants were university students, 20 % (n =48) were working (either employed or self-employed). 16% (n = 38) had conceived children naturally and 1.7% (n = 4) had conceived children supported by reproductive medicine techniques. None of the participants had adopted a child, had a foster child, or had conceived a child via surrogacy. 11% (n = 26) had an unfulfilled wish for a child. 10% (n = 23) had lost a child through miscarriage, sudden infant death or adoption. To ensure that familiarity of metaphors was similar between participants, only native German speakers were included in the study. An overview of the demographic data of the participants is provided in Table 1. The link to the study was made public on several websites (e.g. Facebook.de), was distributed via email distributors and magazines of several organisations and via word of mouth. Participants were asked to give their opinion on a topic related to reproductive medicine. To encourage participation, participants could win an Amazon voucher.

Table 1*Demographic Characteristics of the Sample (N = 236)*

<i>Characteristic</i>	<i>N</i>	<i>%</i>
Gender		
Female	169	71.6
Male	66	28.0
Non-Binary	1	0.4
Age	27.96 ¹	9.95 ²
Education		
Still attending school	1	0.4
Secondary school (9–10 years of education)	7	2.9
Vocational training or vocational school (10–12 years of education)	22	9.3
Grammar school qualification (12–13 years of education)	94	39.8
University degree (Bachelor, Master or PhD)	111	47.0
University degree (Professor)	1	0.4
Occupation		
School	1	0.4
Vocational training	2	0.8
Student (Bachelor, Master or PhD)	159	67.4
PhD student	8	3.4
Employed	44	18.6
Self-employed	5	2.1
Parental leave	1	0.4
Not working (homemaker, child carer or similar)	4	1.7
Early pension due to sickness	4	1.7
Unemployed	3	1.3
Other	5	2.1
Relationship Status		
Single	90	38.1
In a relationship	103	43.6
Married	38	16.1
Other ³	5	2.1
Sexual Orientation		
Heterosexual	216	91.5
Homosexual	5	2.1
Bisexual	10	4.2
Asexual	2	0.8
Other	3	1.2
Children		
Have own children	42	17.8
Have lost a child ⁴	23	9.7
Unfulfilled wish for a child	26	11.0

Note. ¹Mean; ²Standard Deviation; ³Divorced, widowed, or living separated; ⁴Through miscarriage, early death, abortion, or adoption.

Statistical Analysis

Statistical analyses were performed using SPSS software (version 22.0) and R Software (R Core Team, 2019). Missing values were completely at random, meaning that missing values are independent both of observable variables and of unobservable parameters of interest, and occur entirely at random.

Exclusion of Cases

37 participants were excluded for at least one the following reasons: 19 finished the study too fast (1.5 standard deviations below the mean) and 12 could not answer the precautionary questions measuring attention during reading. Furthermore, as we hypothesised that the metaphorical frame should not affect people who already have a strong opinion on the topic of surrogacy, another 8 participants were dropped from the analyses because they had personal experiences with or in-depth knowledge about surrogacy.

ANOVA

To investigate if participants' opinions on surrogacy was influenced by the frame used for surrogacy, three ANOVAs were conducted.³ For each ANOVA, the metaphorical frame - the expression used to describe surrogacy - was used as the predictor. The predictor had three levels: mother to rent, mother to lend and substitute mother. For the first ANOVA, the dependent variable was the "attitude towards surrogacy in general". For the second ANOVA, the dependent variable was "attitude towards surrogate mothers" and for the third one, it was "attitude towards monetary compensation".

Levene's test was used to indicate whether the variances of the three groups were significantly different, which was the case in the ANOVA with "attitude towards monetary compensation" as the dependent variable (value of Levene's test is .003, which is below .05). As recommended for this case, we used Welch's F (Moore & McCabe, 2005).

Planned comparisons were conducted with two contrasts. Contrast 1 compared the frame *Leihmutter* 'mother to lend' - which is most commonly used in Germany- with the frames *Erstatzmutter* 'substitute mother' and *Mietmutter* 'mother to rent'. Contrast 2 compared the frame *Erstatzmutter* 'substitute mother' - the most neutral frame regarding payment - with

³ A MANOVA was not conducted in the main analysis, as the assumption of multivariate normality was not met for the factor "attitude towards monetary compensation". This can be accounted for in an ANOVA, as described on the next page. However, when conducting an exploratory MANOVA, variables remain significant.

the frames *Leihmutter* 'mother to lend' and *Mietmutter* 'mother to rent'. As above, for the dependent variable "attitude towards monetary compensation" the part of the output "does not assume equal variance" was used to account for violated homogeneity. For significant dependent variables, post-hoc comparisons were calculated.

Results

ANOVA

Factor "Attitude Towards Surrogacy in General"

The results of the ANOVA indicate that for the overall effect there was no significant difference between the groups for the dependent variable "attitude towards surrogacy in general" ($F(2,233) = 0.29, p = .75$). Planned comparisons also revealed no significant contrasts.

Factor "Attitude Towards Surrogate Mothers"

The results of the ANOVA showed no significant difference for the overall experimental effect on the dependent variable "attitude towards surrogate mothers" ($F(2,233) = 2.1, p = .12$). However, planned comparisons showed that contrast 1, which compared if the framing *Leihmutter* 'mother to lend' significantly differed from the framing *Mietmutter* 'mother to rent' and from the framing *Erstatzmutter* 'substitute mother', was significant ($p = .04$). The mean of the factor "mother to lend" is significantly lower than means of "mother to rent" and "substitute mother", indicating that participants with the frame "mother to lend" show more support for surrogates.

Factor "Attitude Towards Monetary Compensation"

Welch's F indicated that the main effect of the ANOVA with "attitude towards monetary compensation" as dependent variable was significant ($F(2,155) = 3.5, p = .032$). Planned comparisons showed no significant difference for contrast 1, which analysed if the frame *Leihmutter* 'mother to lend' significantly differs from *Erstatzmutter* 'substitute mother' and *Mietmutter* 'mother to rent'. Contrast 2 compared *Erstatzmutter* 'substitute mother' with *Mietmutter* 'mother to rent' and *Leihmutter* 'mother to lend' and was significant ($p = .01$). The results obtained from the planned comparisons are summarised in Table 2. Post-hoc comparisons (Tukey-HSD and Games-Howell) revealed that *Erstatzmutter* 'substitute mother' differed significantly from *Mietmutter* 'mother to rent' ($p = .04$).

Table 2

Results of the Contrasts of the Factor Attitude Towards Monetary Compensation

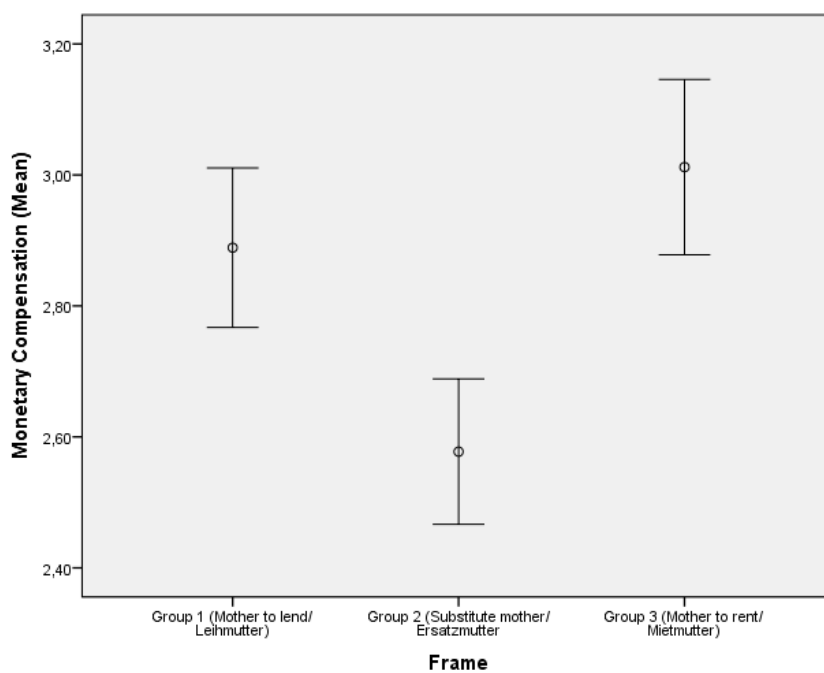
Contrasts	<i>t</i>	<i>df</i>	Significance
Group 1 contrasting group 2 & group 3	-0.63	160.48	.53
Group 2 contrasting group 1 & group 3	2.60	162.74	.01*

Note. * $p < .05$; group 1 = frame "mother to lend", group 2 = frame "substitute mother", group 3 = frame "mother to rent".

The means of the factor "monetary compensation" display the following pattern: Monetary compensation for *Erstazmutter* 'substitute mother' is the lowest, meaning that participants with the frame *Erstazmutter* 'substitute mother' showed overall more support for monetary compensation. In contrast, the means for *Mietmutter* 'mother to rent' and *Leihmutter* 'mother to lend' are higher, with *Leihmutter* 'mother to lend' displaying the highest mean. This indicates that participants with those frames rejected monetary compensation more often (Figure 1).

Figure 1

Means of the Factor "Attitude Towards Monetary Compensation" with Error Bars (95% Confidence Intervals)



Discussion

General Discussion

Results indicated that 1) people's opinion on surrogacy could be influenced by the metaphorical term used, 2) some aspects of people's opinions were more susceptible to the influence of metaphorical terms than others, and 3) if the metaphorical term implied that surrogates help intended parents for monetary compensation, participants' reluctance towards monetary compensation increased.

An ANOVA revealed that opinion towards payment of surrogate mothers, but not the attitude towards surrogacy in general, was influenced by the metaphorical expression used for surrogacy. Participants with the metaphorical frame "mother to rent" opposed monetary compensation of surrogate mothers more frequently than participants with the frame "substitute mother". The influence of the frame on participants' opinion towards surrogates was less clear, as the overall effect indicated no significant difference, however planned comparisons showed that support for surrogate mothers was lower in the groups "mother to rent" and "substitute mother", while participants with the frame "mother to lend" supported surrogates more.

Results can be embedded in the domain-interaction theory (Tourangeau & Sternberg, 1982), with the structures of the words *lend*, *rent* and *substitute* being projected on the concept of surrogacy. Specifically, for *Mietmutter* 'mother to rent', associations with the source domain (money) were transferred on the goal domain (surrogate mother). The results of this study fit with the framing function of metaphors as defined by Entman (1993): metaphors can highlight a particular problem definition and give a causal interpretation. This definition suggests that framing surrogacy in terms of money (e.g., "mother to rent") and not using alternate frames (e.g., "substitute mother"), will uniquely guide the interpretation and evaluation of money-relevant information in line with one's schema for surrogacy. The integration of associations of motherhood and money could then have resulted in resistance, as the concept of motherhood might have been seen in terms of the concept of money. Therefore, participants might resist the frame of the metaphorical term for surrogacy as an unemotional business act, by favouring no or less monetary compensation of the surrogate mother, when the metaphorical frame implies that surrogates only help intended parents for the monetary compensation. In line with the findings of Elmore and Luna-Lucero (2017), these metaphorical framing effects may be driven by the incongruence

of the associations with monetary compensation for carrying a child and the stereotypical associations with female traits such as being selfless, nurturing and caring, which may have led to a rejection of the idea of monetary compensation for surrogate mothers. This theory would also fit with the finding that support for surrogates was lower in the “mother to rent” group, as participants may reject the idea of women being paid for work, for which they are usually being expected to carry out unpaid. However, as the effect was small, this finding should be confirmed by additional studies, before discussing it further.

In our study, a source of uncertainty is how metaphorical frames might have influenced participants’ opinion when another type of input text had been used. The present input text can be described as a factual text and focused mainly on legal aspects related to surrogacy. This context may have influenced our main result, which is that mostly attitude towards monetary compensation was affected by the metaphorical terms. Due to the input text’s focus on legal aspects, monetary compensation of surrogacy may have been in the foreground. Therefore, results should only be interpreted in relation to the factual input text. It would be interesting to conduct a study with another text, focusing for example more on the social implications of surrogacy.

Implications

It is important to note that metaphors are not only cognitive but also cultural and social phenomena. They might reinforce cultural stereotypes and shape social policy (Nerlich et al., 2002). This study matches earlier findings that metaphorical frames can influence the perception of a group of people. Therefore, the present findings suggest a careful choice of terms for sensitive medical and political topics such as surrogacy. On the one hand, metaphors can be used to achieve socially desirable outcomes (Ahn et al., 2014; Landau et al., 2009), while on the other hand, metaphors can be used to dehumanise groups of people (Loughnan et al., 2009) and to reinforce negative stereotypes (Ana, 1999; Lederer, 2013). Surrogacy is a controversial topic and policy regarding surrogacy varies between countries. It is likely that social representations have and still do influence those policies. As the present study indicates how frames can 1) shape how people think about surrogacy and 2) evoke reactance or agreement due to an incongruence with social stereotypes, it is of utmost importance for politicians to consider the implications of the frame used for surrogacy. Moreover, this finding has important implications for developing political guidelines, as both individual and public opinion might have been shaped by the current use of metaphorical

frames. The results of this research support the idea that the frame “mother to rent” evokes reactance regarding the payment of surrogate mothers, whereas the frame “substitute mother” leads to the least resistance in comparison to the other frames, which is why this term might be regarded as the most neutral one.

Furthermore, the results are in line with the finding that in Germany stereotypes of females as nurturing and caring still exist and influence our opinion about other women (Bundesministerium für Familie, Senioren, Frauen und Jugend, 2018). Although there are already some plans in Germany that aim to reduce gender-based stereotypes, we think that language use with regard to gender based stereotypes deserves more attention. It has been found that metaphors can also influence our attitudes towards gender and role expectations (Elmore & Luna-Lucero, 2017). Therefore, further research should help to shed more light on how language is influencing and contributing to political opinions. We believe that supporting a careful choice of language is one building block towards a more inclusive society and towards a reduction of gender-based stereotypes.

Limitations

The generalisability of these results is subject to certain limitations. For instance, it is notable that we aimed for “minimal” manipulation, presenting the same informational texts only with a changed label for surrogacy, the surrogate and the intended parents. Furthermore, the differences between the three labels were quite subtle and mainly referred to the topic of money. Therefore, the finding that the metaphorical framing effect did not generalise more broadly to attitudes towards surrogacy should be interpreted very cautiously and does not imply that metaphors cannot shape broader attitudes. In contrast to the metaphorical frames used in our study, metaphorical frames outside the lab are usually much stronger. For example, in political speeches, politicians use metaphorical frames that often have been pretested for their efficiency in focus groups and repeatedly use descriptions that align with the intended metaphorical frame (Mio, 1997).

In our study we did not assess how much importance the participants attached to money. However, metaphors might influence people more when they lie within people’s value system. A study by Barker (2005) on attitudes towards political candidates’ messages and use of metaphors found that different metaphor frames that exploited receivers’ values were influential in determining attitudes. Therefore, the framing effect might have been

even stronger if we specifically included participants who attribute great importance to money.

Lastly, the main proportion of the study sample was between 18 and 30 years old and more females than males participated in our study. In this case, the effect of age and gender in our sample should be interpreted cautiously as it is not possible to draw solid conclusions for the effects of these demographic variables from our convenience sample.

Strengths

It has been found that elaboration is greater when involvement is high than when involvement is low (Petty & Cacioppo, 1986) and that level of involvement moderates the relationship between metaphor type and elaboration. Our attempt was to control for too much involvement by excluding people who had experience with surrogacy or knew someone who had. Therefore, level of involvement and elaboration were most likely low for most of the participants.

The current work empirically enriches our understanding of the power of metaphorical frames in everyday communication and thought. Previous research suggests that metaphors influence the opinion of people only in some cases. To figure out when people recruit one domain to think about another, we tried to conduct a carefully designed empirical study, by including a manipulation check, thoroughly checking the requirements for the statistical analysis and by including a high number of participants, with a wide range of sociodemographic background and a variation of social experiences, like an unfulfilled wish for a child or a previous loss of a child. This accounts for the fact that metaphorical expressions have different implications for different people, influenced by multiple factors such as cognition, social norms and personal experience (Cameron & Maslen, 2010). To conclude, this study has increased our knowledge about how metaphorical frames can influence participants' opinions about an (out-) group of people in the medical and political field. However, further research should be undertaken to investigate the influence of the metaphorical frame also on decisions and actions of participants, especially for health and medical related topics.

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Appendix of Manuscript 2

German Version of Informative Text

Anweisung: Im Folgenden möchten wir Ihnen einen Text aus dem Bereich der Reproduktionsmedizin vorlegen und bitten Sie, sich ein wenig mit dem Text zu beschäftigen. Im Anschluss werden Fragen zu diesem Text gestellt.

Manche Paare, die auf natürlichem Wege keine Kinder bekommen können, nutzen die Methode der *Leihmutterschaft (Mietmutterschaft/ Ersatzmutterschaft)*. Diese Paare nennt man Wunscheltern (Bestelleltern/ Soziale Eltern). Dabei ist eine Möglichkeit, dass einer fremden Frau eine bereits befruchtete Eizelle eingepflanzt wird, die das genetische Material der Wunscheltern (Bestelleltern/ Sozialen Eltern) enthält. Diese Frau, die man *Leihmutter (Mietmutter/ Ersatzmutter)* nennt, trägt somit ein ihr nicht biologisch verwandtes Kind für die Wunscheltern (Bestelleltern/ Soziale Eltern) aus.

Da *Leihmutterschaften (Mietmutterschaften/ Ersatzmutterschaften)* jedoch in vielen Ländern, wie etwa in Deutschland und der Schweiz, verboten sind, nehmen Wunscheltern (Bestelleltern/ Soziale Eltern) immer häufiger eine *Leihmutter (Mietmutter/ Ersatzmutter)* in Ländern in Anspruch, die diese Möglichkeit erlauben. Dies kann zu zahlreichen rechtlichen Problemen führen, vor allem in Bezug auf die rechtliche Elternschaft, sowie die Staatsangehörigkeit des Kindes. Juristisch ist in Deutschland bisher die austragende und gebärende Frau Mutter des zur Welt gebrachten Kindes.

In der Praxis fallen *Leihmutterschaften (Mietmutterschaften/ Ersatzmutterschaften)* vor allem auf, wenn die Wunscheltern (Bestelleltern/ Soziale Eltern) mit dem im Ausland geborenen Kind in ihr Heimatland zurückkehren wollen und für das Kind einen Reisepass oder Personalausweis beantragen. Dann stellt sich regelmäßig die Frage, ob die Wunscheltern (Bestelleltern/ Soziale Eltern) die rechtlichen Eltern des Kindes sind, denn davon hängt jedenfalls im deutschen Recht die Staatsangehörigkeit des Kindes ab.

Appendix 3

Manuscript 3: Mohnke, M., Roos, Y., & Christmann, U., (in press). Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict? An Empirical Study on the Case of Surrogates. *Psychology of Language and Communication*.

Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict?

An Empirical Study on the Case of Surrogates

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Abstract

Introduction: Metaphors can be used to influence people's decision-making processes. In the judicial context, the use of metaphors is widespread, but its influence on the decision-making process at court has rarely been studied. This study aims to empirically determine the influence of metaphorical frames on judicial decision-making processes in the case of a surrogate against the intended parents.

Method: 204 participants were assigned to one of three groups with different metaphorical frames for surrogacy and were instructed to imagine being jurors in a mock trial. To investigate if participants' decisions were influenced by the frame used for surrogacy, Chi-square-calculations were carried out.

Result: Results revealed that the decision-making process of several issues concerning the surrogate, including a penalty fee, was influenced by metaphorical framing.

Discussion: The metaphorical term "mother to rent" might have framed surrogacy as an unemotional business act, leading to resentment in the participants.

Keywords: Metaphorical framing, decision-making, judicial processes, surrogacy, metaphors, courtroom

Does Metaphorical Framing Influence the Decision-Making Process in a Judicial Conflict?

An Empirical Study on the Case of Surrogates

People rely on the court to impartially decide on their legal matters, whether it is on the matter of child custody, a disagreement with a neighbour, or a divorce. We understand decisions in court as solely based on evidence related to the case. However, studies have long demonstrated other factors to play a role. Regardless of the case at hand, defendants' characteristics such as physical attractiveness, race or gender can influence jurors' judgements (Mazzella & Feingold, 1994). In a mock trial involving a woman killing her abusive husband, Schuller et al. (1994) found jurors' pre-existing knowledge about abuse, gender, beliefs in a just world, and the presence of an expert testimony guided jurors' decisions. Moreover, language may also play a role in the jurisdictional process (Isaacs, 2011). In the research on external influences on jurors' decisions, language has received less attention than the above-mentioned factors. However, other research has found that language, specifically metaphorical language, is used to influence the cognitive processing of information (Bowdle & Gentner, 2005; Lakoff & Johnson, 1980), and to persuade people of a particular argument (Landau et al., 2014; Ottati & Renstrom, 2010). This study suggests that metaphorical framing, which has been found to influence decision-making in other fields (overview: Thibodeau et al., 2017), could also be an important factor for judicial outcomes.

Concluding, verdicts are influenced by the moral values of those judging, their traditional beliefs, their experiences and other external factors such as race, gender, and socio-economic status of the accused. But possibly, verdicts can also be influenced by the language used to describe a case, the defendant or the circumstances. For example, it made a difference to participants' emotional reactions, whether in a media-text femicide is referred to as "murder", "domestic-drama" or "love-killing" (see Schnepf & Christmann, in press). Language can always be used as a rhetoric tool to emphasize or suppress certain aspects of a case⁴ and metaphors, as one specific linguistic tool (comprehensive overview: Berger, 2013; Hanne & Weisberg, 2018) might do this job very well. This is demonstrated for example in an archival study by Goff et al. (2008), which revealed that black defendants were more likely than white defendants to be dehumanized with ape-related language in media coverage (in Philadelphia, period from 1979 to 1999) and that those who were described with ape-

⁴ See for example the effect of "stealing thunder" as a courtroom strategy which reduces the impact of negative case information and leads jurors to change the meaning of evidence (Dolnik, Case, & Williams, 2003).

related language were more likely to be sentenced to death. We chose this drastic example, despite the weaknesses of archival studies, to illustrate that metaphors do make a difference, and that metaphorical framing can change the perspective on a judicial subject matter and might influence the sentence at court.

The Effect of Metaphorical Frames on the Decision-Making Process

Although there is abundant research on metaphors on the one hand (Gibbs Jr., 2008; Ortony, 1993) and framing on the other hand (Entman, 1993; Oswald, 2019), the power of metaphors as frames has only been explored in the last 30 years (Christmann, 2020). Based on the seminal metaphor theory of Lakoff and Johnson (1980), Robins (1996; see also Robins and Mayer, 2000) was the first researcher who started to empirically investigate the effect of various metaphorical frames (see Christmann, 2020). However, we should acknowledge that this was not the first research on the effect of metaphors on thinking and problem solving. Earlier metaphor theories and metaphor processing research also addressed this question without using the label of “framing”. This is particularly true for the domain of text learning, where the facilitative effect of metaphors in text comprehension has been demonstrated long before (overview: Petrie & Oshlag, 1993; see also Littlemore, 2016).

Frames have been conceived as linguistic devices in communication which guide the interpretation of reality by selecting and highlighting some aspects of the message and suppressing others (see the leading definition of Entman, 1993, p. 53). Thus, framing can be used strategically to emphasize problems, provide a solution, an interpretation or a moral evaluation and in this way influence subjects’ thinking, acting, and feeling (Entman, 1993; Oswald, 2019; Scheufele, 2004; Tversky & Kahneman, 1974).

In establishing powerful frames, metaphors have been proven to be a useful linguistic tool (see Christmann, 2020). According to classical rhetoric, metaphors are defined as figures of speech “in which a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them” (Merriam Webster Online Dictionary). They are often considered to be ornaments of language. However, more recent metaphor theories (overview: e.g., Christmann & Scheele, 2001) stress that metaphors are not only ornaments of language, but also conceptual tools that make it possible to understand a so-called target concept in the light of a source concept. This idea, which originally comes from the interactional metaphor theory by Max Black (Black, 1993; original 1954; empirical evidence: Verbrugge & McCarrell, 1977), has been elaborated by Lakoff and

Johnson (1980) in their prominent conceptual metaphor theory and was recently refined by Kövecses (2017). As an example, in a metaphor such as “a theory is a house of cards” the meaning or view of the source “house of cards” (i.e., its’ features, attributes, structures) is mapped on the target “theory”. By doing so, the target is seen from a new perspective. Thus, in our example, a theory is seen as something that is fragile, that has no foundation, and that can easily collapse. It becomes evident that the metaphor acts as a frame of interpretation, which guides our view of “theories” by selecting special features and suppressing others. It is assumed that this process (which is called metaphor framing; e.g., Lakoff & Johnson, 1980; Robins, 1996) guides our understanding of matters, facts and issues and influences our attitudes, emotions, decisions, and actions (see Christmann, 2020).⁵ Empirical evidence for this view has been gathered during the last years in various subject fields, such as political communication (Brugman et al., 2019), health (Hauser & Schwarz, 2015; Scherer et al., 2015), climate change (Flusberg et al., 2017; Thibodeau et al., 2017), and the corona pandemic (Burnette et al., 2022; Schnepf & Christmann, 2022).

There are also multiple studies which address the impact of metaphor framing on the process of decision-making and problem solving. The effect on the decision can range from people’s perception of alternative choices to the perception of the social context in which the decision is situated (Lee & Schwarz, 2014). Robins (1996) found in her studies that metaphorical frames influenced the decisions of participants in everyday dilemma scenarios, such as the decision of whether or not a couple should get a prenuptial agreement. Participants who read vignettes containing the metaphor that a prenuptial is a safety net favoured prenuptial agreements more often than participants who read vignettes with the metaphor that a prenuptial agreement is a weapon. Another study assessed the influence of metaphorical framing on decision-making in moral dilemmas, comparing head and heart metaphors (Hendricks & Thibodeau, 2017). The results showed that in high salience conditions, metaphorically framing the locus of a person’s decision as being either in the head or in the heart could influence whether participants made more rational or more

⁵ According to our view, the difference between using a metaphor and metaphor framing is only a gradual one which is located in the function or the intended effect. If you use a metaphor, you can do this for several reasons: According to classical rhetoric the reasons are threefold, that is *docere, delectare, movere*. Compared to this relatively broad spectrum, metaphor framing is usually used in a narrower sense: it refers to the strategic and intentional use of metaphors in order to influence subjects thinking, feeling, opinion-making, and behaviour.

emotional decisions. A study from the medical field found that metaphorical frames influenced the decision-making of participants concerning vaccination: framing the flu metaphorically (as a beast, riot, army, or weed) in contrast to literally (as a virus) increased individuals' willingness to get vaccinated (Scherer et al., 2015). Finally, in their influential study Thibodeau and Boroditsky (2011) demonstrated that subjects' suggestions for solving a municipal crime problem (enforcement vs. reform) depended on whether crime was framed in the experimental text as "a virus" or as "a beast" (successful replication: Christmann & Göhring, 2016).

Together, studies on the influence of metaphors and metaphorical framing on the decision-making process indicate that metaphor framing can influence people's decision-making in various aspects, such as their willingness to take risks, their rationality while making a decision and even their interpretation of a situation. However, we also have to point out that overall effects of metaphor framing on the word level as well as on the conceptual level are often small (meta-analysis for the political domain: Brugman et al., 2019) and can sometimes only be detected by moderator analysis. For this reason, based on several of her studies, Schnepf (2022) recommends to take into account individual level moderators – at least in framing research in the political domain (see also Schnepf et al., 2021). Nevertheless, even if the effects are small and even if they are hard to detect, we still assume that if every day decision-making processes can be influenced by metaphorical frames, this may also be true for the decision-making process in the legal domain. However, up to now, there is still little empirical evidence which supports this assumption.

The Effect of Metaphorical Frames on the Decision-Making Process in the Legal Domain

Despite several rules, formalities and guidance given to the judges their decisions are still influenced by several informal factors, such as characteristics of the defendant (Devine & Caughlin, 2014), procedural characteristics, case characteristics and deliberation characteristics (Devine et al., 2001; Kelman et al., 1996; Voss & Van Dyke, 2001). This underlines that all legal decision-making takes place in a specific and unique context. As judicial decisions rely on written or oral material, there is yet another factor influencing jurors' decision, and this factor is the language used to describe a case. According to Bordalo et al. (2015) judicial decisions are often affected by salient aspects of the case, irrespective of being legally relevant or irrelevant. Taking salience theory as a unifying theory to analyse judicial biases, the authors postulate that "jurors' attention is drawn to unusual, extreme or

salient attributes of each option” (p. 58) which influence their decisions. And this is exactly when metaphors come into play: they are powerful rhetoric tools to draw the attention of readers or listeners by making special aspects of a case salient and, at the same time, suppress others. In this way they can easily be used as frames which shed new light on well known facts. And indeed, metaphoric language has been shown to be largely used and highly relevant in the judicial domain because metaphors can also help to concretise abstract legal concepts, and to make matters clear, transparent and understandable (Ebbesson, 2008; Hobbs, 2012; Laugerud, 2020; Slosser, 2018). As demonstrated in an analysis of courtroom speech (Campos-Pardillos, 2022), judges – although they are obliged to objectivity – use metaphors to characterize perpetrators and victims. They use it as a tool to mould and colour their sentence and to make it understandable and acceptable for the public or special social groups. Therefore, whether the deed of a criminal is described for example with dehumanizing metaphors (e.g., “he roared”) or with neutral words (“he shouted”) makes a difference to both the sentence and the public acceptance of the verdict. This can also be relevant at court when jurors (“lay judges”) are involved in the decision-making process for a verdict (Vasquez et al., 2014). Ebbesson (2008) stresses that metaphors can facilitate legal communication, but they can also be used as a powerful device of persuasion. As it can hardly be avoided to use metaphors in the legal context, Ebbesson postulates that people working in this context should learn how to recognize them, how to see through them, and how to reject metaphors, when they lead them astray. However, even though the presence of metaphorical language in the legal context has been long acknowledged and analysed (Hanne & Weisberg, 2018), up-to-now, little is known about the effect of metaphorical framing on standard legal reasoning and the judicial decision-making process.

According to the best of our knowledge, there is only one empirical study which directly addresses whether metaphor framing affects decisions in the judicial domain (Vasquez et al., 2014). In a mock trial, participants were given a description of the attack of a perpetrator. In the first condition, the perpetrator was metaphorically framed as “animalistic”, in the second condition, no “animalistic” description was used. The authors found that metaphorically framing the deeds of a perpetrator as “animalistic” (e.g., “he roared”; “the attack was savage”, “blood splattered on the floor”) influenced the decision-making process of the participants, who suggested higher sentences for the perpetrator.

Furthermore, it was demonstrated that the reason for the harsher punishment was a greater perceived risk of future crime.

A couple of other studies demonstrate the relevance of metaphor framing on legal decisions by analysing real decisions in court. Berger (2008) for example showed in an archival study how implicit expectations or assumptions, sustained by metaphors and narratives, shaped decisions in child custody disputes. Jurors in child disputes should ideally make decisions in the best interest of the child. However, according to Berger, specific metaphors which are drawn on at court activate the narratives of traditional family models (e.g., the “sacrificing mother”, the “wage-earning father”). Justifications for judicial decisions often use metaphorical stories which draw on those traditional narratives, which can run counter to the concept of gender equality and to the best interests of the child. One example is the “families are broken” metaphor, which draws onto the narrative of a traditional family as mother, a father, and a child and considers every deviation from that family as “broken”. A single mother with her child would therefore not be considered a family. This metaphor suggests a solution to the “broken family”: fixing the problem would mean “repairing the family”. In the case of a single mother, if she files for custody for her child, but the father remarried and thus better matches the picture of a “family”, the single mother might be disadvantaged, even though she might have a good network of caregivers for the child. Thornburg (2006) interpreted the usage of the metaphor “fishing expedition” in the judicial context and found that it is largely used to discredit the arguments for the plaintiff and moreover, can lead the court’s analysis astray. In her article, Parker (2012) also analysed real jurisdictional decisions in which the metaphor of the “perfect storm” was used to justify causes of action. The metaphor creates a story of a series of bad consequences with an inevitable end, which absolves the human actor of blame. Parker noticed how metaphors are able to emphasize certain aspects of a case and are in the same vein able to de-emphasize other aspects of the case. She stresses that especially when cases deal with topics which are of little familiarity to the jurors, metaphors can be a powerful linguistic device to shape the jurors’ opinions. Finally, Schaefer et al. (2018) conducted a study about bodily experienced metaphors influencing decisions in the field of law, by investigating the effect of tactile hardness: When participants were primed with a hard (versus soft) object before being presented with criminal scenarios, their recommended sentences were

harsher. Having scanned participants' brain activity with fMRI, the authors found that this priming effect might be based on sensorimotor brain activation during the judging process.

Collectively, these studies outline a critical role for framing and metaphors on the decision-making process in the legal domain, especially for cases involving groups who suffer from prejudices. However, all in all, experimental research on the influence of metaphorical frames on the decision-making process in the courtroom is scarce. Those studies which have been conducted in this area focus mostly on the influence of non-metaphorical frames (Bibas, 2004; framing in plea bargaining), or on the influence of other characteristics, such as the characteristics of the juror, the defendant, or the case (Devine & Caughlin, 2014; Kelman et al., 1996; Mitchell et al., 2005). Up-to-date, to the best of our knowledge, only one study has experimentally examined the influence of metaphorical frames on the decision-making process in a mock trial. The current study sets out to explore if a metaphorical framing effect on decision-making can be found in a fictional domestic relations case – which deals with the controversial topic of surrogacy.

Current Study

The studies reviewed above suggest that metaphorical frames could affect people's decision-making process in the legal domain. Based on the above-mentioned findings of earlier studies, this study experimentally examines whether a metaphorical frame can influence how people make their decisions in a legal question. Specifically, in a mock trial, participants will first decide on child custody in a surrogacy case and thereafter on a potential penalty fee for the surrogate.

Like Vasquez et al. (2014) we will use the method of a mock trial to examine metaphor framing effects. The mock trial is a didactic method and a popular tool in legal education and practical training to reconstruct legal decision-making processes (Henking & Maurer, 2013). Participants are asked to take the role of the judge or the juror. Sometimes participants act in a role play, sometimes they read vignettes. Either way, they are asked to make a decision based on the information they were provided. The advantage of this method (in comparison to reading a text, e.g., a newspaper article, like typically done in media-framing-studies) is that participants are asked to put themselves in a judicial role and therefore the ruling situation is described more realistically. In contrast to Vasquez et al. (2014), the present study is not about criminal law, but about family law and the subject of surrogacy. Compared to legal matters dealt with by family law, criminal offenses are often

considered as more serious, thus get more attention from the media and potential sentences for offenders play a big role at court. If we can find an effect in a subtler legal case, this can be seen as an indicator that the effect of metaphor frames might generalize across legal subjects.

Surrogacy is a controversial topic concerning politics and women's rights, and laws regarding surrogacy vary vastly between countries. In Germany, a person who carried and gave birth to a child is legally treated as the child's "mother" (Frommel et al., 2010). Most German people are unfamiliar with the concept of surrogacy (Mohnke et al., 2019), but lately, politics and media started taking up on the topic. One of the reasons why so far there has been little public discussion in Germany is probably that currently surrogacy is illegal. However, surrogacy is possible in other countries, therefore "reproductive tourism" from countries in which surrogacy is illegal to countries in which surrogacy is possible has emerged (Pennings, 2004; Shenfield et al., 2010). This demonstrates that having little public discourse has not diminished the problems related to surrogacy. The above-mentioned studies have demonstrated how people's opinions and decisions can be influenced by metaphorical frames. This study will add to this, by examining whether different metaphorical frames for surrogacy can influence how people make their decisions in a judicial situation.

We hypothesize that the metaphorical frame influences the decision-making process of the participants with regard to which rights they grant the surrogate. To compare the effect of metaphorical frames, three different frames for surrogacy were employed. All of the three metaphorical expressions are currently used in Germany. The German word most commonly used is "Leihmutter" (literally translated as "mother to lend"). "Mietmutter" is an alternative German word for surrogate, suggested by Thomale (2015) and is literally translated as "mother to rent". Lastly, the word "Ersatzmutter" (literally: "substitute mother") is especially used in legal guidelines (e.g., §13a AdVermiG; Ersatzmutter). A semantic distinction exists between the frames, particularly with regard to money: In Germany, the term "rent" refers to paying money for the usage of an object for a specific amount of time. The term "lend", in opposition to "rent", is mostly understood as the usage of an object without monetary compensation. Thus, both "rent" and "lend" imply some reference to money. The term "substitute", however, has no implication regarding monetary compensation and might – in this regard – be the most neutral of the three terms. In a

recent study of the influence of metaphorical frames on opinion on surrogates (Mohnke et al., 2022), the authors used the same metaphorical frames as in the current study: “mother to rent”, “mother to lend”, and “substitute mother”. The study found that opinion towards payment of the surrogate mothers, but not opinion towards surrogacy in general was influenced by the metaphorical frame used for surrogacy. The authors suggested that in their study, participants resisted the implication of the metaphorical frame “mother to rent” for surrogacy as an unemotional business act, so they favoured less monetary compensation of the surrogate mother.

The current study was conducted as an experimental study in a lab, in which participants were introduced to the mock trial in a domestic relations court and were actively involved in the decision-making process of the trial by imagining they were part of the jury. In the mock trial, a surrogate wanted to keep and raise a child, to whom she had recently given birth. The child, however, was promised to the intended parents. Participants were asked to decide on the matter of custody. Moreover, in line with findings of the above-mentioned study (Mohnke et al., 2022), we hypothesized that participants with the frame “mother to rent” will be especially influenced in decisions regarding monetary topics. To assess the influence of the metaphorical frame towards a typical monetary topic in court, we asked participants if a penalty fee for the surrogate would be appropriate because she broke the agreement and if yes, how high the penalty should be. We hypothesized that participants with the frame “mother to rent” will decide more often that the surrogate will have to pay a penalty, or that the penalty will be higher. Moreover, we expected that participants with the frame “mother to rent” will develop reactance towards the surrogate or surrogacy in general because of this framing and therefore their decisions will more often be in favour of the intended parents.

Our experimental design is based on the variation of a single metaphoric expression. We assumed that this minimal form of framing works because the whole text is read, understood and interpreted in the light of the leading metaphor. In this sense, the metaphor works like a schema for understanding the text by organizing information, by providing knowledge and associations about subject matters, and by guiding inferences and expectations (Allbritton et al., 1995; Rumelhart, 2017). Earlier studies have demonstrated that this “one-word”-form of framing (whether metaphorically or conceptually) does work

(Elmore & Luna-Lucero, 2017; Thibodeau & Boroditsky, 2011) ⁶. Moreover, from an experimental point of view it is advantageous to vary only one term within a text, because observed changes in opinion or behavior can be better attributed to the variation itself (see Schnepf et al., 2021).

Our hypotheses are as follows: First, in our study, the metaphorical frames influence the decision-making process in a judicial situation (H1). Second, participants in the group “mother to rent” will feel less supportive of the surrogate and therefore will decide more often in favour of the intended parents (H2). Third, metaphorical framing can influence the attitude of the participants towards remuneration of surrogates. Therefore, participants in the group “mother to rent” will more often decide that the court imposes a fine on the surrogate and will chose higher penalty fees (H3).

Method

Exclusion criteria

Exclusion criteria for the study were as follows: German had to be either participants' mother language or participants had to speak it fluently, as this influences the perception of metaphors. Data of two participants were excluded from the study as they described their German as “not fluent”. Moreover, participants' prior experience with surrogacy was queried. This was done because we hypothesized that their level of involvement would have been too high for the frame to show any influence. However, no data had to be excluded, as none of the participants have had personal experience with surrogacy before. Several variables ensured that participants followed the study attentively. First, percentage of missing answers was checked. None of the dependant variable had missing values as answering these questions was mandatory. Including all questions, participants had a mean of 4 % missing values ($SD = 2\%$, minimum = 0%, maximum 12 %). Second, all participants completed the study up to the last page. Last, after having finished the study, participants were asked if they had been distracted while completing the study, which only one of them answered with “yes, several times”. Finally, none of the participants guessed the topic of the study correctly.

⁶ The idea that the variation of one element in a text makes a difference in understanding is not new. There are some older experiments from cognitive psychology which exactly demonstrate this: just changing for example the title of a text and leaving everything else equal, can dramatically change the understanding of the content (classical experiments: (Bransford & Johnson, 1972; Pichert & Anderson, 1977).

Participants

From January 2019 until June 2019 a total of 204 participants (76.5% identified as female, 23.0% as male and 0.5% as non-binary) were recruited at the University of Heidelberg. Power-analysis indicated that an effect size of 0.3 and an alpha-error of 0.05 would result in a power value of 0.93. Age ranged from 18 to 66 years with a mean of 25 years and a standard deviation of 8 years. Most (92.2%) participants were native German speakers, the remaining 7.8 % spoke German fluently. The majority (87.7%) of participants were students. Of all the participants, 2.9 % had children, 9.3 % had an unfulfilled wish for a child and 2.5 % had lost a child. None of the participants had conceived a child through surrogacy. Table 1 provides an overview of the demographic data of participants.

Table 1

Demographic Characteristics of the Sample (N = 204)

<i>Characteristic</i>	<i>N</i>	<i>%</i>
Gender		
Female	156	76.5
Male	47	23.0
Non-Binary	1	0.5
Age	24.81 ¹	8.32 ²
Education		
Still attending school	0	0
Secondary school (9–10 years of education)	3	1.5
Vocational training or vocational school (10–12 years of education)	5	2.5
Grammar school qualification (12–13 years of education)	128	62.8
University degree (Bachelor, Master)	66	32.4
University degree (PhD)	2	1.0
Occupation		
School	0	0
Vocational training	2	1.0
Student (Bachelor, Master)	173	84.8
PhD student	6	2.9
Employed	12	5.9
Self-employed	4	2.0
Pension	1	0.5
Early pension due to sickness	2	1.0
Unemployed	4	2.0
Relationship Status		
Single	103	50.5
In a relationship	93	45.6

Married	8	3.9
Children		
Have own children	6	2.9
Have lost a child ³	5	2.5
Unfulfilled wish for a child	19	9.3
Surrogacy		
Have had a surrogacy arrangement	0	0
Know someone who had conceived child with surrogacy	2	0.8

Note. ¹Mean; ²Standard Deviation; ³Through miscarriage, early death, abortion, or adoption.

Random assignment to three groups with different metaphorical frames

Participants were randomly and evenly allocated into three groups. Each group was presented with a different metaphorical frame. Group 1 (“mother to lend”) included 33.3% ($n = 68$) of participants. Group 2 (“substitute mother”) included 32.8 % ($n = 67$) of participants. The remaining 33.8% ($n = 69$) were allocated to group 3 “mother to rent”. We did a randomization check to ensure that potential covariates such as age and gender were evenly distributed across groups. The average age in group 1 was 23.68 years. The average age in group 2 was 25.03 years and the average age in group 3 was 25.71 years. No significant differences between groups were found. Gender distribution across groups was as follows: group 1: 53 females, 15 males; group 2: 52 females, 15 males; group 3: 51 females, 17 males, 1 non-binary person.

Manipulation Check

As a manipulation check, we added questions concerning the understanding of “lending”, “renting”, and “substitute”. This enabled us to assess participants’ understanding of the main semantic differences of the three metaphorical terms. For each term, we asked participants if they thought remuneration was involved. Participants’ answers confirmed that all participants assumed that renting included paying a fee and the majority (91%) of participants understood lending as free of remuneration. Substitute was mostly (83%) understood as replacing something free of charge, however 17% of participants interpreted substitute as a replacement against the payment of a fee.

Design and Procedure

An experimental study was conducted at Heidelberg University, where people participated in a room specifically designed for data collection, which was mainly computerized. Invitations to participate in the study were distributed by the study platform of the psychological institute, university E-Mail distributors, posters on university billboards

and word-of-mouth. Invitations stated that participants would be asked to read texts and answer questions concerning topics of reproductive medicine and alternative ways to conceive a child. Each participant took part individually. A study leader was present all times. Data collection had no time restrictions – as recommended for vignette research – to ensure high data quality. On average, study completion took approximately 25 minutes. As an incentive to participate participants either received remuneration of 5 € or credits for their study programme.

First, participants' socio-demographic information was collected. Thereafter, participants were instructed to imagine being a member of a jury in a lawsuit, in which they – as a jury member – will have to make decisions concerning the topic of surrogacy. Participants were randomly assigned to one of three groups. A different metaphorical frame for surrogacy was presented for each group. Prior to making their decisions in a mock trial a fictional case (further described below) was presented. Following that, participants were asked to make five decisions in their position as a member of the jury. Following the decisions participants answered several questions about their own family situation, for example whether participants had children of their own or whether they had ever lost a child. Afterwards participants were given space for comments, further explanations, and critique.

The study was approved by the Ethics Commission of the Faculty of Behavioural and Cultural Studies of the University of Heidelberg.

It was emphasized that participation was voluntary, could be discontinued at any time, and that data collection would be anonymous. While completing the study participants could easily access contact information of the study leader at all times.

Measures

Metaphorical Frames

Each participant read one of three versions of a fictional case (content further described below). The fictional case counted 358 words. The three versions only varied with regards to the terms that were used to describe surrogacy. In each of the three versions the metaphorical term for surrogate or surrogacy was repeated 12 times. Additionally, the corresponding frame-related nouns for the concept “intended parents” was repeated 12 times. In Germany, the corresponding frame-related noun for “mother to lend” is “desiring parents” (“Wunscheltern”), for “mother to rent” it is “ordering parents” (“Bestelleltern”) and

for “substitute mother” the corresponding German frame-related noun is “social parents” (“soziale Eltern”).

The main difference between the different terms used to frame surrogacy was their semantic association with monetary aspects. First, the term “Leihmutter” or “Leihmutterschaft”, literally translated as “mother to lend”, is most commonly used in Germany. Second, the term “Mietmutter” or “Mietmutterschaft”, literally translated as “mother to rent”, is only infrequently used but may better describe the legal implications of most surrogacies (Thomale, 2015). The main semantic difference between the two terms is that “rent” (“mieten”) almost always involves monetary exchange, while “lend” (“leihen”) mostly involves no monetary compensation. This was confirmed in another study (Mohnke et al., 2022), in which all participants defined renting as “One party allows another the use of a chosen item against remuneration”. Lending, however, was defined by 93% of participants as “One party allows another the use of an item free of charge”. Third, “Ersatzmutter” or “Ersatzmutterschaft”, literally translated as “substitute mother”, is a term for surrogacy used in German law (e.g., §13a AdVerMiG; Ersatzmutter). In contrast to both other concepts this frame is semantically less connected to monetary aspects, has less metaphorical connotations and a more neutral meaning.

To check the fictional case for potentially confounding metaphors, the Metaphor Identification Procedure (MIP) was applied (Pragglejaz Group, 2007). Metaphorically used words were determined and potentially confounding metaphors were deleted or replaced with other, non-metaphorical words. The MIP is a method introduced by the Pragglejaz group (a group of metaphor researchers, which collaborated for six years and is known by the initial letters of their first names), which helps to determine whether or not lexical units in a text are metaphorical. The following steps are involved: First, the researcher identifies all lexical units in a text. Second, the researcher determines the contextual meaning for each lexical unit. Third, the researcher determines whether there is a basic meaning for each lexical unit. Last, the researcher determines whether the contextual meaning can be understood in line with the basic meaning. MIP was introduced as an easy method to be applied to all kinds of written and spoken language. It adopts a maximal approach to identifying metaphorical units, meaning that a wide range of lexical units can convey metaphoric meaning.

Content of the Fictional Case

When developing the vignette presented to participants, we relied on best practises outlined in Hughes and Huby (2004). Participants were asked to imagine being judges in the United States, where lay people are called to make judicial decisions. They were presented with a fictional case, in which intended parents hired a surrogate, who would carry their baby. The fictional case covered both the point of view of the surrogate as well as of the intended parents. During the pregnancy and birth, the surrogate develops motherly feelings for the child and the wish to raise the child together with her husband. Both the intended parents and the surrogate with her husband file for custody and the case ends up having to be decided in court, with participants as the judges. In the appendix, a full English version of the fictional case as well as the German (original) version are displayed. The word count for the metaphorical frames for the surrogate (mother to lend/ mother to rent/ substitute mother) and for the corresponding frame-related nouns (desiring parents/ ordering parents/ social parents) is 12 each.

Ruling of the Mock Jury

After reading the fictional case participants took part in a mock trial, in which several matters of the case had to be decided. As part of the mock jury, participants were asked to make the decisions displayed below. When it comes to child custody, the decisions displayed below usually will have to be decided in court. Moreover, typical decisions related to surrogacy and adoption (for example should the child know about the arrangement) were chosen. Finally, as previous research has shown that the influence of the present metaphorical frames was most dominant for monetary topics, participants were asked to decide about a penalty for the surrogate as she had broken the agreement: whether there should be a penalty at all and if so, how much. Decisions were made on a computer and participants could choose between different answers.

Instruction: The surrogate and the intended parents stand trial at court. Both claim child custody. The jury is required to decide on the following matters:

Questions:

- 1) Who gets custody of the child? (The surrogate and her husband/The intended parents)
 - Will the other party get visiting rights? (Yes/No)
 - Should the child know about the arrangement, once it is older? (Yes/No)

- 2) Does the surrogate have to pay a penalty? (Yes/No)
- If yes, how much should the penalty be? (Answer options were: 1€-100€; 101€-500€; 501€-1000€; 1001€-5000€; 5001€-10000€; 10001€-100000€; higher than 100000€)

Statistical Analysis

Statistical analyses were performed using SPSS24.0 for windows. Significance levels were set at the 5% level ($\alpha=.05$) for all tests. For the majority of variables, chi-square (χ^2) procedure was chosen as the χ^2 test is a non-parametric test that can be applied to contingency tables with various dimensions. When data requirements for chi-square were not met, Fisher exact test was used instead. Chi-square calculation was carried out to examine the relationship between the frame and the decision on who gets child custody; the decision on giving visiting rights to the other party; and the decision on whether the surrogate has to pay a penalty. Moreover, chi-square calculation was carried out with a split in height of penalty (low: 0€ - 5000€/ high: 5001€ - ≥ 100.000 €) to examine its relationship towards the frame. Fisher exact test was carried out to examine the relationship between the frame and the decision on future openness towards the child about the arrangement.

Results

Child Custody

By carrying out chi-square calculations we tested the hypothesis that the metaphorical frames influenced participants' decision on who gets child custody (H1). There was no statistical difference between the observed and expected frequency for the three frames, $\chi^2 (2) = 0.11, p = .95$. Of the participants, 41 granted the surrogate custody, the remaining ($n = 163$) granted custody to the intended parents. When asked to explain their decision in an open text format, many of the participants indicated that they based their decision on the fact that there was a legal binding contract between the surrogate and the intended parents.

Visiting Rights

We examined the hypothesis that metaphorical frames can influence the decision on giving visiting rights to the other party (H1). Moreover, our hypothesis was that participants given the frame "mother to rent" will decide more often against the surrogate (H2). There was a statistical difference between the observed and expected frequency in participants' answers for the three frames, $\chi^2 (2) = 6.39, p = .04$. The effect size was small (Cramer's $V = .18$) (Cohen, 1988). As the crosstab in Table 2 illustrates, participants with the frame

“mother to rent” were more likely than participants in the other two groups to deny the other party visiting rights. Looking at individual effects revealed that participants with the frame “mother to rent” specifically denied visiting rights to surrogates, $\chi^2(2) = 6.94, p = .03$. The effect size for this finding was small (Cramer’s $V = .21$; Cohen, 1988). No such individual effect was found for intended parents, $\chi^2(2) = 0.51, p = .77$. Of all participants 51 denied the other party visiting rights, the remaining participants ($n = 153$) supported visiting rights.

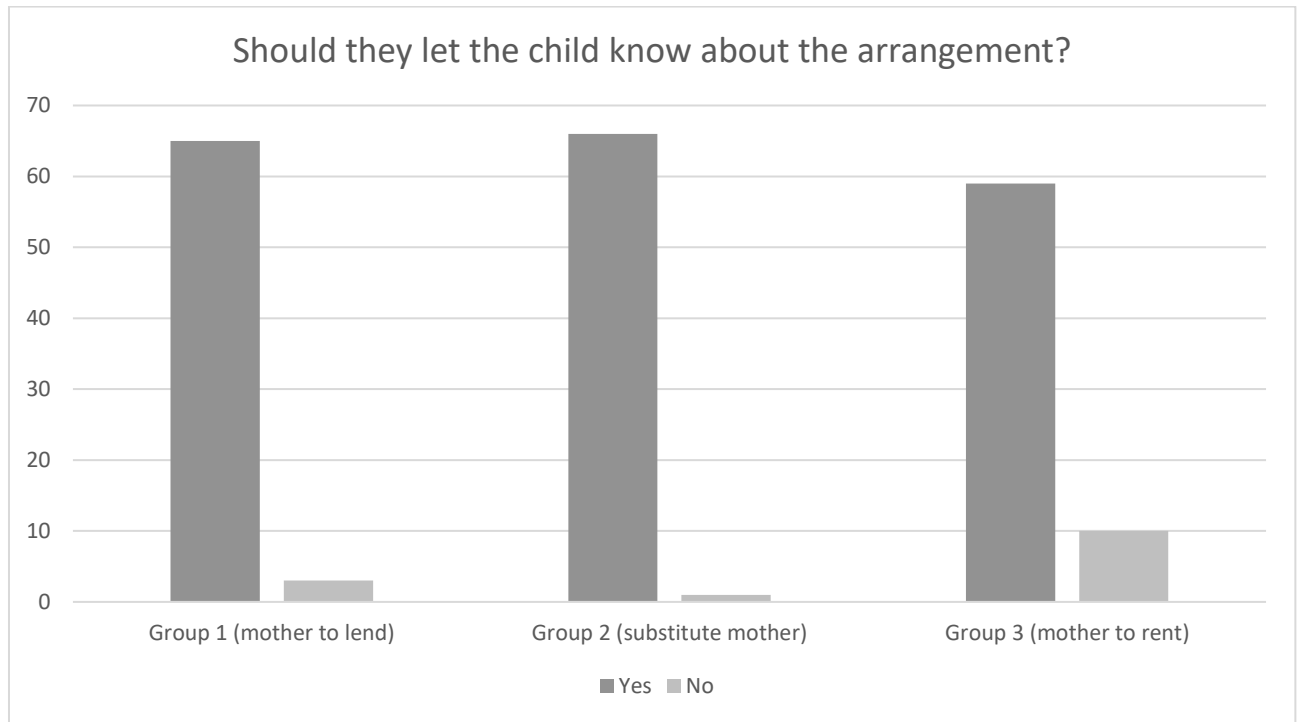
Explaining the Arrangement to the Child

By carrying out Fisher exact test, we examined the relationship between the metaphorical frame and the decision on future openness towards the child regarding the arrangement. Our hypothesis was that participants’ decision will differ depending on the metaphorical frame used (H1). As hypothesized, there was a significant difference between the frame “mother to rent” and the other two frames, two tailed Fisher exact, value 8.94, $p < .01$. The effect size for this finding was moderate (Cramer’s $V = .27$; Cohen, 1988). Again, when dividing the data between the participants who granted the surrogate custody ($n = 41$) and those who granted the intended parents custody ($n = 163$), only for the latter a significant effect was found (two-tailed Fisher exact, value 9.94, $p < .01$). Thus, when participants decided that the child should grow up with the intended parents, participants in the group “mother to rent” were more likely than those in the other two groups to suggest that the child should not know it was carried out by a surrogate.

Figure 1 illustrates the decision of participants, sorted by their allocated metaphorical frame. The exact number of participants who decided for or against “letting the child know about the surrogacy arrangement” was used. The majority of participants ($n = 190$) decided that the child should know about the arrangement. In total only 14 participants preferred to withhold this information from the child. However, of those, 10 were previously allocated to the frame “mother to rent”.

Figure 1

Counts of participants for the question “Should they let the child know about the arrangement?”, groups separated by metaphorical frame



Penalty

We tested our hypothesis that metaphorical framing can influence the attitude of participants towards remuneration of surrogates. Our hypothesis was that participants allocated to the frame “mother to rent” will more often decide that the court imposes a fine on the surrogate (H3). There was no statistical difference between the observed and expected frequency for the three frames, $\chi^2(2) = 1.41, p = .49$. Twenty-two participants with the frame “mother to lend”, 26 participants with the frame “substitute mother” and 29 participants with the frame “mother to rent” decided that the surrogate mother should pay a penalty fee. All in all, 77 participants decided that the surrogate should pay a penalty fee.

Using a sample of these 77 participants, we tested our hypothesis that differences in metaphorical framing will influence the height of the penalty fee. More specifically, we hypothesized that participants with the frame “mother to rent” will demand higher penalties than participants with one of the other two frames (H3). Chi-square calculation with a split in height of penalty (low/high) indicated a statistical difference between the observed and expected frequency in participants’ answers for the three frames, $\chi^2(2) = 6.50, p = .04$. The

effect size for this finding was moderate (Cramer's $V = .29$) (Cohen, 1988). Crosstabs indicated that participants with the frame "mother to rent" chose higher penalties (5.000 € and higher) significantly more often than expected. Table 2 compares the summary statistics of chi-square calculations.

Table 2

Chi-Square Calculations: Did the Frames Influence Participants' Decision in Fictional Court?

Variable	χ^2	<i>df</i>	<i>p-value</i>	<i>Cramer's V</i>
Child custody	0.11	2	.95	.02
Visiting rights	6.39	2	.04	.18
Explaining the child	9.95 ¹	2	<.01 ¹	.27
Penalty yes/no	1.41	2	.49	.08
Height of penalty	6.50	2	.04	.29

Note. ¹Fisher exact test was used instead of Chi-square, as more than 25% of the cells had an expected value <5.

Discussion

General Discussion

Our hypotheses were as follows: First, the metaphorical frames in our study influence the decision-making process in a judicial situation (H1). Second, participants allocated to the frame "mother to rent" feel less supportive of the surrogate and therefore will decide more often in favour of the intended parents (H2). Third, metaphorical framing can influence the attitude of the participants towards remuneration of surrogates. Therefore, participants allocated to the frame "mother to rent" will more often decide that the court imposes a fine on the surrogate and will chose higher penalty fees (H3). The results of this study support the idea that metaphorical framing can influence the decision-making process in a judicial situation. The results did not show an influence of the frame on the decision of custody, as most of the participants decided that the child should be with the intended parents instead of the surrogate, regardless of their metaphorical frame (H1). Possibly, this led to a ceiling effect. In an informal follow-up questioning, participants were asked how they reached their conclusion. Many participants argued that their decision to grant the intended parents custody was based on the fact that there was a legal binding contract between the surrogate and the intended parents. An analysis of the follow-up decisions demonstrated a significant difference in participants' decisions (H1), depending on their metaphorical frame: 1) As hypothesized, participants with the frame "mother to rent" denied the surrogate visiting

rights for the child significantly more often than participants with the frames “mother to lend” and “substitute mother” (H2). 2) Moreover, after participants decided that the child should grow up with the intended parents, those participants with the frame “mother to rent” also significantly more often supported the idea to hide the surrogacy arrangement from the child, than the participants with the frames “mother to lend” and “substitute mother” (H2). 3) Of the 77 participants who decided that the surrogate mother should pay a penalty fee, those with the frames “mother to rent” chose higher penalty fees significantly more often than the participants with the frames “mother to lend” and “substitute mother” (H3).

There are several studies that assess the influence of psychological effects on judicial decision-making, however, only few studies empirically investigated the effect of metaphors on the decision-making process at court. Earlier studies found that metaphorical frames probably play an important role in court, as they have been found to influence the attitude of defendants and are a popular tool for lawyers (Lloyd, 2016; Rachlinski, 1996). The present results suggest that language, and specifically metaphorical frames, can even influence the decision-making process in a judicial conflict. It experimentally underpins several analyses of field studies on the influence of metaphors in real decisions in court (Berger, 2008; Thornburg, 1995). To exemplify, Berger (2008) found that decisions concerning child custody were shaped by implicit assumptions, which are sustained by metaphors in everyday life. To date only one other study empirically investigated the influence of metaphorical frames of verdicts in a mock trial (Vasquez et al., 2014). The results of the current study are in line with their results. Using a similar study design (mock trial), the current study can underpin the findings of Vasquez, that it might be possible to influence the decision of a jury by metaphorical framing. Vasquez looked at decisions made in criminal law and involved a sentence in jail. Our study shows that in addition metaphorical framing might also be an influential factor in a domestic relations case. In contrast to criminal law, decisions in family court are subtler, get less media attention and do not involve drastic penalties such as jail time (or even the death sentence). Since in our study decisions could be influenced by metaphor framing in a subtler legal case, this can be seen as a first indicator that the effect of metaphor frames might generalize across legal subjects. All in all, as in the judicial field experimental studies on the influence of metaphors on decision-making in court are still

largely lacking, those two studies together add important information to the several archival articles which analyse real court decisions (Berger, 2008; Parker, 2012; Thornburg, 2006).

Our hypothesis was that participants with the metaphorical frame “mother to rent” will have the most negative association with surrogacy, especially with regard to monetary compensation, whereas the metaphorical frame “substitute mother” will be the most neutral one, especially with regard to money. Indeed, results showed that participants with the frame “mother to rent” decided more often against visiting rights of the surrogate, decided more often to hide the surrogacy arrangement from the child, and on average decided on a higher penalty fee for the surrogate. Most likely, participants used the metaphorical frames for the purpose of categorizing (Mio, 1997). In line with the domain-interaction theory (Tourangeau & Sternberg, 1982), the words “lend”, “rent” and “substitute” were interacting with participants’ concept of surrogacy. The frame “rent” evoked the most negative results for the surrogate and of the three frames, “rent” is the most tightly connected to money. Probably, for participants with this frame, the source domain “money” was projected onto the goal domain “surrogate”. Therefore, associations between the surrogate mother and money were the strongest for the frame “mother to rent”. Metaphors can highlight specific aspects of a problem and guide interpretations (Entman, 1993). The aspect of remuneration in the concept of surrogacy was highlighted for the frame “mother to rent”, but not for the frames “mother to lend” and “substitute mother”.

The results indicate that the metaphorical frames influenced decision-making of the participants. One theoretical explanation could be that for the frame “mother to rent” the integration of the associations of motherhood and remuneration induced a reluctance towards the surrogate or surrogacy in general, which in turn influenced participants’ decision in the fictional court situation. This hypothesis is in line with the results of Elmore and Luna-Lucero (2017), who found that metaphors can activate gender stereotypical thinking. Moreover, in another study on the influence of the metaphorical frames “mother to lend”, “mother to rent”, and “substituted mother” (Mohnke et al., 2022) it was hypothesized that the incongruence between a woman who gets money for carrying a baby and the stereotype of women, being selfless, nurturing, and caring (Bem, 1974; Hentschel et al., 2019), became most obvious when the frame “mother to rent” was used. In the current study, this could explain the reactance of the participants with the frame “mother to rent”

towards the surrogates: the metaphor “mother to rent” stresses the gender deviant behaviour of the surrogate, which is then punished by the participants. This idea is supported by a study on first impressions of politicians (Okimoto & Brescoll, 2010), which found that both male and female politicians were perceived as power-seeking by the participants. However, this was only problematic for the female politician. She was perceived as less caring, which led to moral outrage and negative emotions towards the female politician. This provides a possible explanation for the results of the current study in which surrogates, for whom the metaphorical frame “mother to rent” stressed that they do not behave according to their prescript gender roles (selfless, nurturing), were given a higher penalty fee. Concluding, as the metaphorical frame “mother to rent” underlines how the surrogate violated gender prescriptions (putting other peoples’ needs above their own without monetary compensation, inherent interest in children and motherly instincts), the surrogate in the group “mother to rent” might have been punished more in court for her gender deviant behaviour, than the surrogate in the groups “mother to lend” and “substitute mother”. This study suggests that this effect could especially be important in situations for groups who face prejudices, such as surrogates, as metaphorical framing can emphasize stereotypes and increase stereotypical thinking (Charteris-Black, 2006), which is also important when it comes to decision-making processes in court. In particular lay jurors could be susceptible to stereotypical thinking because of limited judicial knowledge and experience.

Implications

All over the world, jurors and judges make decisions in court which shape people’s lives. Many states’ systems rely on courts to make the right decisions in a fair and neutral way, using laws, guidelines, and former decisions as references. However, reason in law can be regarded as an open-ended concept, influenced by context and in need of continual revision. Therefore, as the court is a situation in which the context plays a huge role, the seemingly neutral decision process can also be impacted by language. Thus, the decision-making process in court is a highly relevant research area for studies assessing the influence of metaphorical language (comprehensive overview: Berger, 2013; Hanne & Weisberg, 2018). The current study demonstrates that metaphorical frames can influence decisions in a mock trial. Together with the study of Berger (2008), who states that implicit expectations, sustained by metaphors, have shaped real decisions in court concerning child custody, the

present results imply that metaphors could possibly influence decisions in judicial conflicts. In court, the judge sometimes renders a judgement based on circumstantial evidence. In those cases, the judge decides if there is sufficient evidence to convict the defendant. This would be one situation in which it is very important to be aware of those metaphorical effects. Therefore, further investigation regarding the influence of metaphors in lawsuits should be conducted to provide politicians and the legal profession with clear advice on how to deal with those effects.

The present study also demonstrates the power of metaphorical frames in law-related language in general. Metaphors and figurative language can be found everywhere in law. They can be seen on traffic signs, read in basic legal texts, and found in the vocabulary of lawyers (Lloyd, 2016), often used without much reflection. Thus, they shape the legal discourse and can, implicitly, determine which arguments count in judicial conflicts and also in court. Legal structures and legitimation of court decisions are pervaded by metaphorical frames, which makes it important to unravel how they influence, enrich and also facilitate judicial communication and decision-making processes. The influence of metaphors can probably never be eliminated, however, in light of the present results, it is clear that jurors, judges and lawyers should abstain from those metaphors which activate implicit stereotypes and endanger equality. The next step would be to become more conscious about and sensitive to the influence of metaphorical framing and teach those responsible for objective decisions in judicial situations about the power of metaphors. If the judge considered that the courtroom is influenced by language and that their personal experiences, values, and perspective affect the decision-making process, the judge would take this into consideration and – ideally – reflect how those personal values could influence the verdict in the individual case.

Limitations and Further Research

All participants in this experiment lived in Germany, so the implications about metaphorical frames for the decision-making in law may not generalise to members of other countries or cultures. Future research could investigate interactions between cultural background, country-specific law regulations, and metaphorical frames for decision-making in law. Also, the vignettes were presented in written form. It would be interesting if these effects would be replicated if the vignette was presented as a video with audio (or an acted live event). However, a recent study has shown that the metaphor framing effect was similar

across communication modalities (Flusberg et al., 2020). Furthermore, due to methodological reasons, potential covariates such as age and gender were not included. However, a randomization check ensured that those potential covariates were distributed evenly across groups. There are other covariates which might be important such as knowledge about surrogacy and most important personal involvement. We ensured that no participant was personally involved with the topic of surrogacy. However, for future research level of involvement could be an interesting covariate. Lastly, the question remains on how much the present experimental evidence sheds light on decision-making in an actual courtroom. Although vignettes and mock trials such as the one used in our study can never account for the complexity of real-life situations, they are an important methodological tool to study courtroom conflicts. At the end of the day, the ecological validity of the results clearly depends how close the vignettes match real life situations. However, first, results are in line with studies looking at actual courtroom situations and second, one should also keep in mind that the complexity of a courtroom situation might make people even more vulnerable to metaphorical frames and other psychological biases.

In the study, all three terms for surrogacy can be seen as metaphorical frames. Therefore, comparison of the effects was possible between the metaphorical frames, however, not between the metaphorical frames and a literal control condition. This is due to the fact that when it comes to surrogacy in Germany, no literal word exists to describe the subject. As mentioned in the method section, the term “substitute mother” is preferred in judicial texts: it is a metaphor but it clearly has less metaphorical connotations than the other two terms. In contrast to both other frames, this frame is semantically less connected to monetary aspects (Mohnke et al., 2022). Although there are more studies in the field which do not work with a control condition (e.g., Thibodeau & Boroditsky, 2011), for grounds similar to the ones we have mentioned above (“Replacing or removing the key metaphorical words does not make a neutral stimulus, it makes a different stimulus.”; Thibodeau & Boroditsky, 2015; page 18), from a mere methodological point of view, a clear control condition – if available – is the method of choice.

The current study assessed the effect of metaphorical frames on the decision-making process and found that in this particular domestic relations case, the decisions of the jurors could be influenced. The application of metaphors is popular in other judicial areas too, as for example when lawyers justify their line of reasoning (Ebbesson, 2008; Lloyd, 2016), when

describing the action of the accused, or when a parent is deprived of child custody. The next step would be to transfer knowledge from other metaphorical framing research to investigate which cases might be especially affected by the influence of metaphors. This could be true for more emotional cases, as emotions were found to play a main role in the effect of metaphors (Kühne, 2013), or cases which jurors have little knowledge about. Therefore, it would be interesting to compare the effect of metaphors for different kind of cases (e.g., criminal case, domestic relations case, labour case). Moreover, we think that one next step would be to assess more variables, such as the emotional response and moral evaluation of participants towards those involved in the case; and the personal involvement and judicial knowledge about the case, to gain more insights into the mechanisms. Our results are not based on the responses of real lay jurors, professional lawyers or judges, but on participants from various study and occupational fields. This is a strength on the one hand because lay jurors come from different vocational backgrounds. It is a weakness on the other hand because we did not include law students or participants from the judicial domain. Thus, further studies of metaphor framing in the judicial field should look for effects in groups with different degrees of judicial expertise.

Conclusion

In the judicial field, experimental studies on the influence of metaphors on the verdict in court are still largely lacking, although it is known that metaphors are often used in judicial situations and in court (Campos-Pardillos, 2022; Ebbesson, 2008). Most studies are field or archival studies which analyse real court decisions from the past (Berger, 2006; Goff et al., 2008; Thornburg, 2006). Both study types are heuristically valuable but do not allow for causal interpretation. The findings from these studies must be supported by experimental studies which allow to test cause-effect-relationships. The current study is a step in this direction. The results show that in a fictional judicial situation, some decisions of the participants could be influenced by the metaphorical frames used. As it is not possible to conduct experimental studies in the courtroom, further research should concentrate on working with mock trials where participants from the judicial domain are confronted with realistic judicial scenarios.

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