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APPLIED IT

GAME THEORY AND CUSTODY DISPUTES

Empirical Evidence for the Equality Principle

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Abstract

The adversarial nature of custody disputes poses risks for the involved children. Children to parents with a long-lasting, high-intensity conflict have been shown to suffer more than children involved in a peaceful separation. Means of successful mediation between parents in a custody dispute are therefore warranted. Reducing the total time between separation and court ruling is also warranted, as children suffer from uncertainty and low stability. The *Equality Principle* (EP) is a theoretical construct stemming from research in the fields of game theory and goal-setting theory. The EP can reduce the time requirements of custody disputes by introducing the threat of randomizing the outcome when parents can not come to an agreement. It can also serve to increase each parent's offer of visitation time, by tying those offers to the outcome of the dispute. In this study the EP was tested experimentally as a means to increase cooperation between parents through the use of vignettes. In a within-subjects design experiment with 52 Swedish-speaking participants, offers of visitation time was measured in two conditions, represented by two different decision scenarios. The results show that participants offer higher amounts of visitation time in a decision scenario based on the EP than in one based on the present system. This study concludes that the EP shows promise in terms of being implemented as a tool to increase cooperation between litigating parents.

Keywords

Equality Principle, Game Theory, Goal-Setting Theory, Custody Disputes, Parental Conflict

Foreword

Both of us have been thoroughly involved in the work that lead up to this article, and we believe that we spent an equal amount of time and effort researching, conducting the study and writing this article. With regards to the article, the introduction section was written mainly by Andreas and the discussion section was written mainly by Bruce, but these and all other sections were discussed and edited by us both.

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1 Introduction

1.1 Background

In families with a high level of long-lasting interparental conflict, parents put their children at risk for various issues related to their well-being. Separation is not uncommon in such cases, which can lead to a dispute about child custody. In this article, a *custody dispute* is defined as a judicial dispute concerning either custody, living or visitation. *Custody evaluators* are defined as the units assigned by the authorities responsible for investigations in custody disputes. *Family court* is defined as the social service unit that provides the court with recommendations based on the findings of these investigations. In custody disputes, where conflicts between parents are frequent, their children are prone to suffering anxiety, insecurity and depression among other health issues (Bergman & Rejmer, 2017).

In Sweden, 7327 custody disputes were settled in county courts in 2018. This is an increase of more than 150% from the 2909 settled disputes in 2006 (Swedish National Courts Administration, 2006, 2018). Common in all these cases is the suffering of affected children. Children whose parents go through with a divorce following conflict are prone to stress and feelings of grief (Mcintosh, 2003). Children exposed to a high level of interparental conflict are also prone to mental health problems and long-lasting implications for their adjustment following divorce. However, peaceful divorces reduce exposure to high parental conflict and may lead to amelioration of the children's possible future mental health problems (Lansford, 2009). The well-being of a child is tied both to the intensity of the conflict between parents and the number of stressful events a child is exposed to. Exposing a child to high-intensity conflicts or many stressful events, including life changes, decreases the child's well-being (Amato, 1993; Emery, 1999). A Swedish archive study in which 33 court acts were analyzed showed that 34 out of 57 children in high-conflict divorces had health problems around the time of the court negotiations (Bergman & Rejmer, 2017). Anxiety, fear, insecurity, sleeping problems, nightmares and depression were the most common psychological issues. Common physical issues reported among the children in the reviewed material are headache, stomachache, recurring fevers and other signs of disease (Bergman & Rejmer, 2017). Consequently, if high-conflict divorces cannot be resolved before court negotiations, in many cases the damage to affected children has already been done.

In these cases, the decision making of the involved authorities should be in accordance with Swedish law. Above all else, the risk of maltreatment must be considered. Concerning custody, it is stated that the child's best interest should be decisive for all decisions regarding custody, living and visitation rights. The law also emphasizes the importance of a close and good contact with both parents (SFS 1949:381).

1.2 Investigations in custody disputes

In Sweden, like in many other countries, parents can sue each other for custody if they cannot come to an agreement about the custody of their children after separation. In these cases, a custody evaluation is initiated by government assigned units to establish what is best for the child in that situation. Custody evaluations include investigations concerning custody, living and visitation. The evaluations are conducted by the social service, and courts make legal rulings based on recommendations and findings of the investigations (Ngaosuvan, 2018b). Suggestions regarding such investigations, court decisions as well as general information about investigations are provided by the government authority Family Law and Parental Support Authority (Family Law and Parental Support Authority, 2018). One part of the investigation is the risk assessment (RA), which determines whether either of the parents pose a risk of maltreating the child, which would make that parent unfit for custody. In the RA investigators focus their attention on parental risk factors, emphasizing criminal history, drug use, maltreatment, mental illness and other factors that may be associated with a high risk of child maltreatment in the future. A parent that is deemed unfit in the risk assessment will not be awarded custody. Another part of the custody evaluation is the investigation for the child's best interest (ICBI). During the ICBI other factors are considered that may not put the child in risk of maltreatment but might still affect the child's well-being. One such factor is stability, as minimizing the child's sense of loss is a key point in the assessment of the child's best interest (Schiratzki, 2008, p. 92). Stability can refer to circumstances relating to housing situation or proximity to school and friends.

Conflicts that cannot be resolved using the RA as grounds for a decision tend to get prolonged as the differences found in the ICBI can often be described as the "splitting of hairs", that is, not important enough differences to select one parent for custody over the other (Ngaosuvan, 2018a). These prolonged conflicts negatively influence the children involved by not providing them the security of knowing where they will live and how their daily life will be managed. In such cases, both parents might be considered fit by the RA and ICBI but the conflict itself is causing harm to the child. A swift resolution to the conflict would in these cases improve the child's well-being (Ngaosuvan, 2018a). The court must make a ruling in such a case, and the issue is that the ruling might be based on information that is irrelevant to the child (Saunders, Tolman & Faller, 2013). Any factor that a court finds in favor of a particular parent can be weighed arbitrarily more than other equally relevant factors, for example which parent had the highest amount of parental leave during the child's first year (Ngaosuvan, 2018a). In this way courts run the risk of selecting a, to the child, irrelevant factor and making their judgment based on that factor as there is no other evident way to resolve the dispute. Another risk is that courts favor even more detailed investigations to find even the slightest differences in parent fitness, prolonging the time the investigations take and effectively making the resolution of the dispute a more important goal than the child's well-being (Ngaosuvan, 2018a).

1.3 Game theory

Game theory is defined as the study of mathematical models of conflict and cooperation between intelligent and rational decision-makers (Myerson, 1997). These models attempt to explain situations in which decision-makers must interact with one another. In these situations, sophisticated reasoning about the other decision-makers' motivations is required. A simple example is the stag hunt game, where two hunters enter a field filled with hares and one stag. Each hunter has to individually decide which to hunt for. Taking down the stag yields the highest reward for both hunters. The hares are easily caught, but the stag requires two hunters to take down. Should both hunters opt to hunt for hares, they each capture half of them. If one hunter goes after the stag alone, that hunter will go home empty-handed while the other hunter captures all the hares. Situations where one player cannot unilaterally improve their outcome by changing their strategy is known as a Nash equilibrium. The stag hunt game has two such situations: when both hunters opt to hunt for the stag and when both hunters opt to hunt for hares. In either of these situations, changing one's strategy will result in a lesser reward. The stag hunt game constitutes a non-zero-sum game, meaning that the gains or losses of one player are not equally balanced by the gains or losses of the other players. Cooperation can lead to a win-win scenario that is beneficial to both players, in contrast to a typical zero-sum game like poker, where the total losses subtracted from the total gains always amount to zero.

Another example of a non-zero-sum game is the prisoner's dilemma, where two players acting as prisoners have to decide whether to cooperate and stay silent or defect and testify against the other prisoner. Mutual cooperation is most beneficial for both players, yielding a minimal prison sentence for each player. If both players defect, they both get a harsher sentence than when cooperating. Should however one player defect while the other cooperates, the one who defects is released, while the cooperating player gets the harshest possible sentence. The original prisoner's dilemma is a one-shot game where the players only play one round. In a one-shot game, defection is the best option. An iterated version exists, where multiple rounds are played, allowing for other viable strategies. In the iterated prisoner's dilemma, players can punish defectors by employing a tit-for-tat strategy where they mimic the last move of the opposing player. With an uncertain or infinite amount of iterations, mutual cooperation a viable strategy, as any move of defection can be remembered by the opposing player. However, if the number of iterations is known to the players in advance, defection remains the only evolutionarily stable strategy. This is because the optimal strategy for both players on the last iteration is defection. This holds true for the next to-last interaction, the one before that, and all the way back to the first interaction (Axelrod & Hamilton, 1981).

This study investigates the application of a game-theoretical construct called the *Equality Principle* (EP) as a means to increase cooperation between parents in custody disputes.

1.4 The Equality Principle

In order to motivate parents to renegotiate the terms of their dispute and potentially come to an agreement during negotiation, the Equality Principle was introduced (Ngaosuvan, 2018a). Stemming from the application of splitting the difference in law and research in the fields of game theory and motivational psychology, this principle proposes to utilize the threat of randomization of outcome to promote cooperation between parents. The essential benefits of this decision process are saving time, reducing child suffering and increasing transparency, fairness and reproducibility. The EP can be used to bring about a court decision in a shorter amount of time and potentially lead parents to come to an agreement outside of court. Child suffering is reduced both by providing predictable housing conditions and less exposure to conflict in a shorter amount of time. Another benefit is transparency, as the ruling is based on openly available information that cannot be skewed in favor of one parent. Fairness is another important factor which the EP provides, as investigator biases such as deeming one parent as more likeable cannot influence the ruling. Additionally, the EP improves reproducibility of court decisions through implementation of the same procedure for all cases in which the principle is applicable.

Before applying the EP, a few criteria must be met. No critical information about risk for future child maltreatment can be found in the RA and no decisive information can be found in the ICBI (Ngaosuvan, 2018a). The second of these criteria is difficult as there are no strict guidelines that courts can follow when interpreting such factors, which can lead to the splitting of hairs (Ngaosuvan, 2018a). The EP can be a useful tool in a situation of high conflict that meets the aforementioned criteria. The basic EP states that: “If both parents are fit, there are no decisive differences in practical aspects, and the conflict between the parents rule out shared custody, then courts should flip a coin to decide the winner.” (Ngaosuvan, 2018a, p. 586). It is important to note that in this type of litigation, what is argued over is the living arrangement and time spent with the children, and as such, the basic EP is a form of winner takes all scenario unless otherwise stated. This approach is unlikely to lead to more cooperation among the litigating parents, but a more advanced version of the basic EP can be used to improve the chances for cooperation.

In this advanced version, before a final court decision, parents are prompted to offer an amount of visitation time to the other parent. The parent that gives the highest offer will win sole custody of the child and the losing parent will be given the amount of visitation that was offered by the winner. In the case that both parents offer the same amount, the outcome is determined by randomization with equal odds for the parents, and the losing parent will get the amount that was offered. For example, if parent A offers 30% visitation time, and parent B offers 20%, parent A is awarded sole custody of the child and parent B is awarded the right to 30% visitation time. The offers will be made independently of each other, such that parents will have no knowledge of each others offer until both offers have been recorded. For the rest of this article, EP refers to this advanced version. The EP should promote cooperation between parents behaving rationally, in the sense

that each parent is more likely to win the higher amount they offer. At the same time, the losing parent benefits more from a winner offering a high amount than a low amount. Potentially both parents could offer the same very low amount of visitation, in which case the outcome would be determined by randomization. This is the biggest weakness of the EP, as presumably such an outcome would not promote close and good contact with both parents. This can potentially be addressed by further modifying the specific rules of the EP.

1.5 Emotion, motivation and goal setting

Emotional distress and adversarial confrontations are central to each parent in a custody dispute (Emery, 1999), it is therefore important to mitigate the risks these factors impose on the potential resolution of the dispute. One way to reduce the damages these factors cause is to employ strategic mediation between the disputing parents (Dillon & Emery, 1996), allowing them to see the situation from another perspective and hence preferentially increasing their willingness to cooperate. The reasoning behind using the EP comes from motivational psychology, specifically goal-setting theory. Goal-setting theory describes how task difficulty relates to performance, how the setting of goals influence performance, the importance of action-causation and the commitment to goals for performance on tasks.

Specificity, challenge and proximity are three of the most important factors that motivate people according to Goal-setting theory. Specificity concerns the case where giving a vague description of goals with respect to a certain task will produce lower motivation to perform that task than if given a specific description. Challenge relates to the difficulty of the task, where the highest level of motivation occurs on tasks that are moderately difficult as opposed to very easy or very difficult (Latham & Locke, 2002). Regarding proximity, a big and complex problem can be broken down into sub-problems which are separated in time and are each easier to manage than the larger problem (Latham & Locke, 1991).

The EP makes the decision problem within the custody dispute a specific, proximal and moderately challenging problem, and as such might influence the decisions made by parents during litigation. The EP introduces a threat directly relating to each parent's propensity to cooperate, as it ties each parent's offer causally to the outcome of the dispute. The aim is that this threat will make parents opt to cooperate and come to an agreement in the final talks before the court decision. It is important to note that in the present system, litigating parents have no real incentive to let their opponent have any visitation time with their child. The difference between how disputes are normally settled in court compared to a situation in which the EP is applied is that the parents are faced with a final decision with highly specific information. As parents gets a final chance to influence the outcome of the dispute, they may also be more willing to accept the outcome. When a parent loses the dispute, they immediately know the reason, their offer was too low. As such, the situation should nudge parents to act more rationally, according to how they need to act in order to reach their goal. It might potentially alter their goal if the threat of the EP is high enough that it warrants a renegotiation of the terms where one or both parties might alter their stance. In the present system numerous custody disputes are resolved between parents just before

a court decision (Swedish National Courts Administration, 2018; Ngaosuvan, 2018a), as courts' decision-making can seem arbitrary and intimidating. If parents are not certain of the outcome they might try to renegotiate and come to terms before the court makes its ruling. The EP can potentially act as a trigger for this phenomenon, making it apparent for parents earlier in talks that the court decision could come to be based upon offered visitation or randomization, effectively motivating parents to come to terms during litigation.

The aim of this study is to determine whether the EP can be used to facilitate cooperation between parents. In order to address this question, the following hypothesis was formulated: People will be more cooperative in a decision scenario based on the EP than in a decision scenario based on the present system.

2 Method

2.1 Participants

The sample consisted of 52 Swedish speaking adults (26 men and 26 women). Participants were recruited through social media, advertising boards, pamphlets and various Swedish online forums. The mean age for participants in the study was 34.0 ($SD = 12.2$), with ages ranging from 22 to 70 years.

2.2 Materials

In this study, an online vignette experiment was conducted. Vignettes were used because of the necessity to evoke the same type of negative emotional states that are common in custody disputes. The study included an introductory text containing general information about Swedish law in relation to custody disputes, along with some information about outcomes and considerations. Two vignettes were developed for this study, referred to as *favor mother* and *favor father*. The vignettes were identical but for the fact that names and pronouns were switched such that the story told in the vignette could be interpreted in favor of either the father or the mother, depending on the gender of the participant. The vignette contained a short story about an ongoing custody dispute between a man - woman ex couple. The favor mother vignette promoted negative aspects of the father and positive aspects of the mother, and vice versa for the favor father vignette. The vignettes also contained neutral information regarding the facts of the situation from the family court's perspective and ended with the parents' own attitudes regarding one another being voiced. Two decision scenarios were created, one instantiating the present system and the other based on the EP. Furthermore, questions concerning participants' knowledge, experience and various opinions of the subject were included. All material responded to by participants in this study were presented in Swedish.

2.2.1 Vignette

Several statements regarding the previous relationship between the parents, their actions, behaviors and traits were incorporated into a story consisting of three paragraphs with varying focus. In the first paragraph the circumstances regarding this particular custody dispute was established. After that introduction several statements were presented showing how one parent had betrayed the other for many years, having an affair and using the other parents' funds to visit hotels and travel with a secret partner. The unfaithful parent is also shown to have accused the other parent of assault, of which no evidence has been found. Furthermore, several

petty accusations have been filed with the authorities by the unfaithful parent, showing that he/she is prone to overreaction and unwilling to cooperate.

The second paragraph is designed to show the family court's interpretation of the situation, and in sum they decide that the accusations of the unfaithful parent do not hold up as evidence to declare the other parent unfit for custody. The family court decides that neither the infidelity nor the alleged assault is relevant in the consideration of the children's best interest. Furthermore, it is explained that the conflict itself is becoming harmful for the children. Since the parents can't settle the dispute with negotiation, the family court will have to decide which parent should be given custody of the children.

In the final paragraph it is reiterated that the situation is unbearable for the parents and children alike, and that the situation seems to get worse because of the uncertainty of not knowing when and how it is going to end. The parent's attitudes toward each other is voiced in this paragraph. By voicing positive aspects of their own behavior and situation, and raising negative aspects of the other parent, each parent tries to influence the custody evaluators into making a recommendation in their favor.

2.2.2 Decision scenarios

2.2.2.1 EP

In the decision scenario based on the EP, the participant is presented with the information that unless the parents can come to an agreement, the family court will have to decide who should be awarded custody. It is stated that the risk assessment conducted by the custody evaluators found neither of the parents to be unfit for custody, neither have they found any decisive differences regarding what is in the children's best interest. However, since the prolonged conflict between the parents is deemed harmful for the children, sole custody will be awarded to one of the parents. Further, it is stated that the final decision will be based on the amount of visitation that each parent would be willing to offer the other in the case he or she wins the custody dispute. The parent offering the highest amount would therefore win the dispute unless both parents offer the same amount, in which case randomization would determine the outcome, with the offered amount being given to the losing parent.

2.2.2.2 PM

The decision scenario based on the present system contains the same information as the EP scenario regarding the risk assessment, children's best interest and the harmful conflict. The main difference between the decision scenarios concerns the information regarding the family court's decision. In the present model, the only information given about the decision is that the family court is very likely to award one of the parents with sole custody.

2.2.3 Measures

Two types of decision scenarios were included as independent variables in the experiment, the *present model* (PM) and the *equality principle* (EP). The PM was an instantiation of a decision scenario based on how recommendations and rulings are currently being made and the EP was a decision scenario based on the Equality Principle. As a measure of cooperation, the dependent variable, *visitation generosity*, was defined as the amount of visitation time offered by participants in response to each decision scenario. Visitation generosity was measured in percent of time, ranging from 0 to 50%. The study included ratings of parental aptitude, measured on a 1 to 7 scale, on which 7 represented a parent completely fit for custody. A measure of participants *experience* of custody disputes was included, defined as either having been involved in a custody dispute or being close to someone who has been involved in a custody dispute.

2.3 Design & Procedure

This study comprised a simple within-subjects design experiment. The experiment was conducted online. Participants who agreed to partake in the study were instructed to proceed to a link where they would sign informed consent. General information such as gender and age were gathered from participants as well as information concerning their knowledge, experience and opinion of custody disputes and family law. After responding to the initial questions each participant received the introductory text and the vignette favoring the parent corresponding to their own gender. After reading the vignette the participants were asked to respond to multiple questions regarding the vignette. Participants were then asked to read and respond to two decision scenarios. One decision scenario represented a traditional decision process, instantiating the present system. The other was based on the EP. The order of presentation of the decision scenarios were randomized with equal numbers of participants receiving each of the two possible orders. The participants were then asked a few follow-up questions regarding the credibility of the scenario they had read, model preference and their previous knowledge of the EP.

3 Results

3.1 Main hypothesis

The mean visitation generosity was 39.38 ($SD = 11.83$, 95% CI [34.82, 44.34]) in the EP condition and 33.92 ($SD = 14.23$, 95% CI [28.97, 38.49]) in the PM condition. The number of participants with the highest possible visitation generosity (50%) was 22 in the EP condition and 18 in the PM condition. Levene's Test of Equality of Error Variances yielded a statistically significant result within the EP condition, $F(1, 50) = 4.40$, $p < .05$. A Wilcoxon Signed-Ranks Test was performed, which showed a statistically significant difference between the means, $Z = 3.712$, $p < .05$.

3.2 Internal validity

The mean rating of parental aptitude for the parent of the same gender as the participant was 5.88 ($SD = 0.95$) for men and 5.65 ($SD = 1.29$) for women. The mean rating of parental aptitude for the opposite gender parent was 3.15 ($SD = 1.51$) for men and 3.92 ($SD = 1.67$) for women. A Mann-Whitney U test was conducted to determine the difference between genders in perceived parental aptitude of the parents presented in the vignette. There was no statistically significant difference between men and women in perceived aptitude of the parent presented as the same gender as the participants $U = 315$, $p = .661$, nor was there a statistically significant difference between men and women in perceived aptitude of the parent presented as the opposite gender of the participants $U = 246$, $p = .086$. The mean rating of perceived parental aptitude across participants for the parent presented as the same gender was 5.77 ($SD = 1.63$) and the mean rating for the parent presented as the opposite gender was 3.54 ($SD = 1.13$). A Wilcoxon Signed-Ranks Test showed a statistically significant difference between the mean ratings of the parents presented in the vignette, $Z = .540$, $p < .05$.

There were 26 participants who had experience of custody disputes. The mean visitation generosity for participants with experience was 37.46 ($SD = 13.40$) in the EP condition and 32.23 ($SD = 15.16$) in the PM condition. For participants without experience the mean visitation generosity was 41.31 ($SD = 9.92$) in the EP condition and 35.62 ($SD = 13.32$) in the PM condition. No statistically significant difference was found between the groups in the experience factor, indicating that the data does not show that experience of custody disputes was a confounding factor.

No other factors in this study yielded statistically significant results.

4 Discussion

4.1 General discussion

The EP is a theoretical construct based on game theory and motivational psychology (Ngaosuvan, 2018a). This article provides empirical evidence that the combination of game theory (Myerson, 1997) and goal-setting theory (Locke & Latham, 1991) affect participants' cooperation. The results of this study support the hypothesis that people will be more cooperative in a decision scenario based on the EP than in a decision scenario based on the present system. The goal of any mediation model used in custody disputes should be to increase cooperation between litigating parents. Hopefully, the benefits of this model extend beyond more evenly distributing children's time spent with each parent. When parents are deemed equally fit in the present system, custody evaluators are left to look for small differences - splitting hairs (Ngaosuvan, 2018a). Social workers, like all humans, are susceptible to bias (Sagi & Dvir, 1993). The EP can steer away from any value judgments by removing bias from the equation. Additionally, the EP may lead to less suffering as it can greatly reduce the time children have to spend living in uncertainty. The EP can save both courts and litigating parents money as no time needs to be wasted on circumstances of little significance to the child's best interest. With a successful implementation of the EP, cooperation will presumably come to be understood by the general public as a good strategy for winning custody disputes. It is not unreasonable to assume then, that with time, cooperation might be increased further than these results suggest. Should its use become widespread, it is possible that people would negotiate themselves to avoid the risk of randomization introduced by the EP. For instance, this may happen if their advisors would tell them that there is no chance that the court would find any involved parent as unfit.

The results of this study did not show any statistically significant difference in which model participants preferred when asked to rate to what extent they thought each model should be used in custody disputes. This shows a potential discrepancy between their stated preference and how much visitation was offered. Multiple explanations are possible. One possibility is that there is a belief that the present system should suffice in determining which parent is more fit, that there must be some dividing factor not yet found by the investigation. This of course, leads to the splitting of hairs. Another possible explanation is the transparency offered by the EP. When losing custody under the present system, there are infinitely many reasons one could come up with to explain the outcome as having nothing to do with one's own behavior and actions. With the EP, any such reasons are easily discounted. This transparency, however, is desirable as it becomes objectively clear what determined the outcome of any such custody dispute. Furthermore, transparency should reduce the number of re-litigations as claims of unfair rulings will be easily dismissed.

One obvious weakness of this study concerns ecological validity. It is very difficult to introduce the emotional and adversarial nature of a custody dispute in an experimental setting. The necessity to evoke the same type of negative emotional states that are common in custody disputes prompted the use of a vignette as a means for gathering data. Even so, roughly one third of participants offered the maximum amount of visitation in both conditions. This may indicate that the vignette did not sufficiently evoke the degree of negative emotions commonly felt by litigating parents, as inability to cooperate is the reason there is a custody dispute to begin with. However, as shown by participants' rating of parental aptitude, the vignette was successful in producing negative valence toward the parent of the opposite gender. This was further strengthened by subjective ratings of the credibility of the vignette. Had this not been the case, it could have been a threat to the internal validity of the study.

A possible limitation of using an economic model for decision scenarios is that observed behavior usually does not line up with the models' predictions. When decision makers are predicted to act selfishly and rationally, they generally are less selfish and strategic than the model predicts. This may be due to social factors such as reciprocity and equity (Sanfey, 2007). This should not be an issue for the present study, however, as reciprocity and equity could only lead to more cooperation. Furthermore, equity could be the reason for the high visitation generosity in the PM condition. In a high-intensity parental conflict, equity is unlikely to be a motivating factor, and so visitation offered in a real case might be much lower than in the PM condition. It is also possible for players to be motivated by punishing their adversary in a game-theoretical decision scenario. This has been illustrated in a trust game, where players have been shown to derive satisfaction in punishing non-reciprocators, even when this resulted in a loss to themselves (Sanfey, 2007).

The only way to exhibit punishing behavior in the present framework is to make a very low offer, in which case the probability of winning the dispute is very low. This would only result in victory if the other parent makes an even lower offer. However, this situation seems very unlikely, particularly if the motivating aspects of the EP are high. The result of this study indicates that the EP would lead to increased offers for both parents as compared to the present system. The potential problem of both parents offering very low amounts could be mitigated in various ways. One way of mitigating the problem could be to decide a lowest allowed offer, e.g. 25%. If the winning parent offers only 7%, the court decides to offer no less than 25% visitation time to the losing parent. The more generous parent will be awarded sole custody but the losing parent will get the court mandated lowest amount of visitation. This is just one example of how the problem could be addressed, but presumably there could be even better alternatives. More research and consideration is needed on this front.

4.2 Gender differences

It is interesting to note that gender was not shown to affect visitation generosity in either condition. Coupled with the fact that no difference was found between genders in perceived parental aptitude, this is very promising for the EP. This means that according to the results of this study, the EP works equally well on both men and women. This lends credence to the fairness aspect of the EP, as it is not shown to be favorable for one gender.

4.3 Clinical significance

In terms of measurable outcome, the results may not seem to be of major clinical significance, as the amount of visitation divided among the parents is similar in the two conditions. However, as the goal of the EP is to maximize visitation generosity, we argue that there is a clinical significance to these results. In the EP condition, 4 more participants offered the maximum amount of visitation than in the PM condition. For at least four children, this means spending half their time with each parent instead of what would have been offered if the EP had not been used. Furthermore, when parents cooperate and reach an agreement about evenly distributed time with a child, the risk for re-litigation should be low.

4.4 The need for evidence-based practices

Every three years, The National Board of Health and Welfare (2017) conducts an investigation aimed at randomly selected operations managers within individual and family care as well as disability and elderly care. They are asked questions about standardized assessment methods and ventures of evidence-based practices. In 2016, 75% of the responding operations managers claimed to have an interest in evidence-based practices. However, only 6% of those managers stated that their co-workers had enough knowledge of how to evaluate the quality of evidence. When asked about what was deemed very important when it comes to implementing evidence-based practices, the most common response, stated by 59% of respondents, was a clear recommendation from state authorities. Clear recommendations from various research institutes were deemed very important only by 15-23% of respondents, depending on which research institute issued the recommendation (The National Board of Health and Welfare, 2017). It is safe to say then, that the implementation of new procedures is more likely to come from state recommendations than any academic entity. However, for any such recommendation to ever be issued with regards to the implementation of the EP, clear and concise evidence supporting the EP must be made be available.

4.5 Further research

We encourage more studies in the subject to further test the EP in relation to traditional decision making in family law. There are ways to modify the EP to potentially further increase the amount of visitation offered by each parent. If both parents offer an equal amount, and that amount is less than 50 percent, parents could be prompted to make a new offer instead of randomizing at this point.

This approach can be likened to the iterated prisoners dilemma, as the parents are provided with new information before making their next offer. Since this new round of offering only occurs when both parents have offered the same amount, the information they gain is that their adversary is just as generous as they are. This information can serve multiple functions. Either as a threat, as you now know that your adversary is prepared to offer at least as much as you are, and you could easily lose if you do not increase your offer substantially. Or it can function as a token of good faith and cooperation, as you know they are willing to grant you the same amount of visitation as you granted them. In the trust game, players are predicted to betray one another but often choose to reciprocate (Sanfey, 2007). Increased generosity through reciprocation would indeed not go against the predictions of this instantiation of game theory, rather, it would conform to them.

Either way, another round of offers could only increase the amount of offered visitation. Further threat could be introduced by informing the parents that this will be the final offer even if both parents offer equal amounts again. This could potentially drive parents toward an even higher offer. Of course, this could also be set up so that new offers are requested each time parents offer equal amounts, until one parent offers more than the other, or the amount offered by both parents have reached 50 percent. If both parents are willing to offer 50 percent, then presumably they should be able to come to an agreement of shared custody and settle out of court. If either parent is unwilling to agree to shared custody, the court will have to settle the matter by randomization and contractually bind the parents to their obligations regarding the child's custody. Such a contract could be used to make sure that the parent with sole custody cannot legally move and bring the child to a new location unreasonably far from the current home. The contract could also legally prevent one parent from withholding information regarding the child's health, school results or in other ways make it difficult for the other parent to have a good and close contact with the child.

5 Conclusions

This study has provided experimental evidence that the EP works as a means to increase cooperation. The implementation of the EP as a motivational tool in custody disputes show much promise and should therefore be a real consideration. The combination of game theory and goal-setting theory is an appropriate approach when trying to increase parental motivation to cooperate within the context of a custody dispute. We believe the results provided in this article to further build on the foundation established in this subject and can serve to guide future studies. Furthermore, the EP is shown to work regardless of gender or previous experience with custody disputes. This is a very important point, as the EP needs to be applicable in any situation where both parents are considered fit for custody.

6 References

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7 Appendices

7.1 Vignette

Pernilla och Tommy befinner sig i en långdragen och kostsam vårdnadstvist. De kan inte komma överens om vårdnaden av sina två barn och Pernilla stämmer Tommy för enskild vårdnad. Anledningen till osämjan mellan föräldrarna är att Pernilla varit otrogen mot Tommy under flera års tid. Pernilla har dessutom utnyttjat Tommy ekonomiskt genom att använda gemensamma resurser till privata angelägenheter som hotellvistelser, resor och middagar med sin hemliga partner. Hon har ljugit om gamla skulder och maskerat sina privata nöjen som arbetsrelaterade resor, och på så vis lurat Tommy att betala för aktiviteter i samband med Pernillas möten med sin hemliga partner. Sedan parets separation har Pernilla flyttat ihop med sin nya partner. Innan parets separation polisanmälde Tommy av Pernilla för misshandel i hemmet i samband med deras bråk om otroheten. Tommy skall ha kastat en tallrik i väggen och skrikit åt Pernilla vilket resulterade i att hon kände sig väldigt rädd. Tommy medger att han blev arg, men nekar anklagelsen om misshandeln då han aldrig rörde Pernilla. Pernilla har sedan parets separation polisanmält Tommy vid fler tillfällen, i anslutning med att han varit försenad med att lämna barnen hos henne. Hon har även gjort orosanmälningar hos socialtjänsten då Tommy varit några minuter sen att hämta barnen i skolan.¹

Det är familjerättens bedömning att båda föräldrarna är lika lämpliga vårdnadshavare sett till både risker och att skillnaderna i barnens bästa intressen är försumbara. Familjerätten vill också berömma båda föräldrarna för att de inte blandat in barnen i konflikten. Familjerätten menar att Pernillas anmälan om misshandel saknar grund då den påstådda misshandeln bara inträffat vid ett tillfälle, och inte heller fyller kraven för misshandel då inget fysiskt våld utövats. Det är alltså enbart föräldrarnas oförmåga att komma överens som leder till att vårdnadstvisten inte kan lösas med samarbetsamtal. På grund av att familjerätten anser att den fortsatta konflikten mellan föräldrarna är skadlig för barnen bedömer familjerätten att det är i barnens bästa intresse att ge den ena föräldern enskild vårdnad med rätt till umgänge för den andra föräldern.

Livssituationen är påfrestande både för barn och föräldrar. Det är framförallt barnen som drabbas och blir lidande ju mer tid som går i ovisshet. Pernilla uttrycker att hennes nya partner är den enda pappan barnen behöver, och att Tommy därför inte behöver finnas med i bilden. Tommy anser att Pernillas låga inkomst och det faktum att hon får förlita sig på sin nya partners ekonomi är en otrygghet för barnen. Tommy uttrycker att Pernilla är manipulativ och egoistisk och därför är en olämplig förälder. Av denna anledning anser Tommy att han borde ha fördel i familjerättens beslut. Han uttrycker även att han bryr sig mer om barnen då han spenderar mer tid med dem, lagar mat åt dem och hjälper till mer med läxor än vad Pernilla gör.

¹ The vignette were presented in Swedish. The names and pronouns used in the vignette were switched such that the vignette favoring the mother were presented to women, and vice versa for men.

7.2 Decision scenarios

7.2.1 Present Model

Om de tvistande föräldrarna inte kan komma överens i det sista avgörande samtalet kommer det att vara upp till familjerätten att fatta ett beslut grundat på en samlad bedömning baserad på barnens bästa intresse. Familjerätten meddelar att ingen av föräldrarna bedömts vara olämplig i riskbedömningen och att skillnaderna mellan föräldrarnas situationer sett till barnens bästa är försumbara. Eftersom konflikten mellan föräldrarna anses skadlig för barnen så kommer beslut om enskild vårdnad att fattas. Med största sannolikhet kommer det att innebära att en förälder kommer att tilldelas vårdnaden och den andra kommer att få ett begränsat umgänge.²

7.2.2 Equality Principle

Ifall de tvistande föräldrarna inte kan komma överens i det sista avgörande samtalet kommer det att vara upp till familjerätten att fatta ett beslut om vårdnaden av barnen. Familjerätten meddelar att ingen av föräldrarna bedömts vara olämplig i riskbedömningen och att skillnaderna mellan föräldrarnas situationer sett till barnens bästa är försumbara. Eftersom konflikten mellan föräldrarna anses skadlig för barnen så kommer beslut om enskild vårdnad att fattas.

Familjerätten kommer att tilldela vårdnaden till den förälder som erbjuder mest umgänge till den andre föräldern. Den förälder som gett ett lägre bud får så mycket umgänge som den högstbjudande föräldern erbjudit. Båda föräldrar får ge sina bud samtidigt, utan att känna till den andres bud. Ifall båda föräldrarna skulle erbjuda lika mycket tid så kommer beslutet om vårdnaden att slumpas, med lika stor vinstchans för båda föräldrarna.²

² The decision scenarios were presented in Swedish.

7.3 Questions

Table 1

General questions asked in the study.

Questions
Have you been involved in a custody dispute?
Do you have an acquaintance that has been involved in a custody dispute?
If you have responded yes to any of the above questions, is the custody dispute ongoing?
Do you have general knowledge of family law regarding custody, living and visitation rights?
How high is your confidence in the family court's decision making?
*Opposing gender parent's emotional betrayal is one of the most hurtful things one could subject one's partner to.
*Opposing gender parent's economic deceit is one of the most hurtful things one could subject one's partner to.
*Opposing gender parent is a fit parent
*Own gender parent is a fit parent
Did you perceive the story as realistic?
To what extent should the following model be used in courts' decision making? (PM / EP)

Table 2

Experimental questions asked in the study.

Question asked after presentation of each experimental decision scenario
If you were own gender parent* in the stated decision scenario, how much visitation would you offer the opposing parent*?

* In the study, questions were stated with the name of the parent represented in the vignette, which varied depending on the gender of the participant.³

³ The questions were stated in Swedish and have been translated for this article.