

Can a Negotiator Build a Tough Impression Without Chatting? — Implicit Power and its Influence on Human-Computer Negotiation

Yushan Liu
Concordia University
yushan.liu.concordia@gmail.com

Rustam Vahidov
Concordia University
rustam.vahidov@concordia.ca

Raafat Saade
Beijing Institute of Technology
raafat.saade@gmail.com

Abstract

In this paper, we studied the influence of implicit power in an e-commerce setting where humans negotiated with computer agents. Implicit power is defined as a kind of perceived power gained indirectly through offer exchange. In much of the past research, power was always considered to be expressed directly through chat or natural language communications during negotiation. We suggest that there is another mode of expressing power other than chat: implicitly influencing. Specifically, we designed an experiment where several aspects of implicit power were studied: anchoring, agent profile image, and experiment subjects' personality. In our experiment, the subjects negotiated the purchase of a laptop with computer agents acting as sellers. The result suggested that implicit power indeed influenced the negotiation result.

Keywords: human-computer negotiation, implicit power, anchoring, profile image, individual difference.

1. Introduction

Nowadays, with the development of artificial intelligence, human-computer interaction is becoming increasingly intensive and rich. In the context of e-commerce, technology has evolved from simple catalogue-like look-up websites to advanced dynamic interfaces allowing negotiation. In this regard, the employment of artificial software agents could help the parties achieve mutually acceptable deals.

In negotiation, power is considered the most important factor that will influence negotiation results (Pinkley et al., 1994). In most previous research, power is always considered to be gained directly through chat or natural language communications during negotiation. We suggest that there is another approach to express power that the negotiating party implicitly perceives through ways other than chat. We further suggest that this kind of implicit power will influence the negotiation result.

Implicit power is a kind of power that is perceived by the other party through tacit hints in negotiation as opposed to expressed through direct communication or demonstration. In past studies, some negotiator attributes (such as anchoring and concession tactic) were studied separately from power. This led to some conflicting results from past studies (Schaerer et al., 2015). In this paper, we incorporate the agent's anchor, concession tactic, and profile image into an agent's implicit power. We then investigate the influence of the agent's implicit power on negotiation results. Meanwhile we introduced human negotiators' individual differences into our model as their implicit power and studied the influence of such power.

So the research question of this paper is: *can implicit power (from both human and computer agents) influence a negotiation process and its result?*

This paper examines the definition and the influence of implicit power in e-commerce settings where humans negotiate with computer agents. Specifically, an experiment was conducted, and several aspects of implicit power were studied: anchoring, agent profile image power, and experiment subjects' personality power. In our experiment, the subjects will negotiate the purchase of a laptop with computer agents acting as sellers. Two anchoring conditions and four profile images were used to test the influence of these implicit power. As the source of intrinsic power, the participant's personality (Social Value Orientation) was also tested in three different types: prosocial, individualistic, and competitive.

Introducing implicit power in e-negotiation studies will enrich and clarify the concept of power. Past research used "power" and "anchor" separately as two inputs to their models. However, as proposed by the current paper, anchor is one aspect of power: implicit power, so using these factors as two independent variables may lead to confusion.

2. Backgrounds and research model

2.1. Negotiator power

Negotiator power, as one of the basic concepts in social science, has been considered one of the most important factors in negotiation (De Dreu & Van Kleef, 2004). Based on the social exchange theory, power-dependence theory (Emerson, 1962) is refined for negotiation research. The effect of power on negotiation has been studied in many studies (Anderson & Thompson, 2004; Galinsky et al., 2003). It is widely acknowledged that power can affect negotiator performance. A negotiator with higher power can claim more resources in negotiation results.

Kim et al. (2005) divided power into four categories: potential power, perceived power, power tactics and realized power. There could be a difference between real power and perceived power. This difference can be made by Power Tactics. Power tactics mean the “use” or “change” of power. The “use” of power can claim actual benefit for negotiators, while the “change” of power can make the perceived power higher than real power. In one article, the perceived power of negotiators affected the distribution of result utility (Wolfe & McGinn, 2005). Specifically, when two parties were perceived as having equal power, the parties got more integrative results.

Power Tactics are used to affect the power balance by enhancing the negotiator’s own power or diminishing the other’s power. Enhancing the negotiator’s power can be achieved through communication between two parties, such as using coercive threatening or expert knowledge. But besides those solutions to show power explicitly, other factors can also influence perceived power implicitly. One can use some methods to build up a strong power image implicitly using methods such as strong opening (anchoring), facial expression cues (such as angry facial expressions), using a masculine profile image, and showing very little or no compromise (concession tactic), et.

To eliminate the influence of the negotiator’s wording, text, or communication methods, we used a system with offer exchange only. The participants cannot chat through the system. The only way to communicate is through the exchange of offers.

2.2. Anchoring

Anchoring is usually referred to as the initial offer or opening offer. It sets up the starting point for following offers and counteroffers.

From past research, scholars found that higher power can prompt negotiators to set a higher anchor and hence a higher result utility. For example, researchers found that high-power negotiator tends to use a higher anchor than low-power negotiator (Galinsky et al., 2008). In another article, Kristensen and Gärling (2000) noted that counteroffers were higher for a high rather than low anchor point. As the negotiation goes on, higher counteroffers usually result in a higher result for the higher-power party. This is also supported by the research of Galinsky and Magee (Galinsky & Mussweiler, 2001; Magee et al., 2007).

We believe anchoring and concession tactic should be included as aspects of implicit power. Anchoring level and concession curve of an agent can influence the perceived power of the agent. Suppose an agent made an aggressive first offer and hardly made any concessions. In that case, such an agent will leave the counterpart an impression that he/she may have better alternatives and hence be perceived as a powerful agent. It has been found that negotiators’ perception of their own power will result in more aggressive anchor offers and hence the final values negotiated (Purtell, 2018). This research suggested that anchor is an indicator of one party’s perception of their own power.

In past studies, it was commonly accepted that higher power would lead to a higher result. However, in a study of Schaerer et al., the authors found a conflicting result that “*having no power can be better than having a little power*” (Schaerer et al., 2015). In their study, the authors found that negotiators with no alternatives (no power) all set higher anchors. In contrast, negotiators with weak alternatives (weak power) all set low anchors. As a result, the negotiators with no power reached a higher outcome than the ones with weak power. The authors concluded that anchors have larger effects than power. But in our opinion, an anchor is one factor that can represent power. Negotiators with no power all set higher anchors, which, in turn, made the counterpart perceive that the negotiators may actually have some power. According to Kim et al., perceived power is the factor that will actually influence the negotiation result (Kim et al., 2005). Then the higher anchor set by no-power negotiators actually increased their perceived power to the counterpart, and they reached a better outcome than weak-power negotiators.

In summary, an agent that sets a higher anchor will make the other party feel difficult to gain more from the negotiation. As a result, the agreement utility for agents who set higher anchor will be higher:

Hypothesis 1: Anchoring level will positively influence the result utility for an agent.

2.3. Agent “gender”

According to French and Raven’s (1959) typology of power bases, “Referent Power” is a function of how attracted one party is to the other party and how much this party can influence the other party. Referent power is also known as charismatic power. On encountering new people, we may gain or give power based on observed accents, appearance or other attributes possessed by some individuals but not others. Accordingly, the settings of the agent’s profile image can be an important way of expressing a computer agent’s power. Through the profile image, the agent can be designed to be a male or female agent with a serious or smiling facial expression. A serious male image can give the other party a powerful and competitive image. Hence, this kind of profile image will have higher referent power. This is supported by Ragins and Sundstrom (1989)’s research that revealed a consistent difference favouring men in accessibility to, and utility of, resources for power.

More importantly, this kind of referent power is not a trivial factor in negotiation. In an exploratory study of Dobrijevic et al. (2011), the authors conducted a thorough study of sources of power and developed an extensive list of 16 sources of power. Among the 16 sources of power, intangible power (referent power) is among the three most important influencing powers when negotiating with peers. The other two sources of power are the need for negotiation and relationships. In our negotiation case, the exchange is between the student buyers and computer agent sellers. Since computer agents have young female and male profile images, the negotiation can be recognized as between peers.

Social role theory (Eagly, 1987; Eagly & Karau, 2002) proposes that distributive negotiating presents a disadvantage for women. According to social role theory, social roles—such as gender roles—carry expectations regarding appropriate behavior. When a person behaves in ways not consistent with stereotypic expectations, one is likely to be negatively evaluated in terms of the gender role, the role of negotiator, or both (Eagly & Diekmann, 2005; Eagly & Karau, 2002), according to what is called Role Congruity Theory. This effect has been demonstrated specifically in negotiation (Watson, 1994). According to social role theory, the stereotype held by western society is that women behave in a manner that reflects concern for others and selflessness (*communal*) (Bakan, 1966). By contrast, men display competitiveness, self-assertion, and desire for achievement (*agentic*). Accordingly, Bakan (1966) claims that because negotiation performance rewards aggressive and competitive behaviors congruent with agentic stereotype, female

gender stereotypes place female negotiators at a disadvantage (Kray & Thompson, 2004; Miles, 2010).

Many research findings have shown that women’s performance in mixed-gender negotiations often falls below those of men, especially in negotiations on monetary tasks (Bowles et al., 2005; Stevens et al., 1993; Walters et al., 1998). In a meta-analysis of extant research dealing with gender differences in negotiation outcomes, Stuhlmacher and Walters (1999) found that across studies, men negotiated significantly better than women, but the differences in outcomes between men and women were small. Over the years, scholars have conducted a host of studies to uncover the mechanisms that may account for this gender gap. In the end, three factors were found to account for these gender effects: individual differences between female and male negotiators, partners’ differential reactions to women and men negotiators, and situational factors (Demoulin, 2014).

Plenty of researchers have already found that gender difference stems from the individual behavioral differences between female and male negotiators before, during, and after the negotiation (Greenhalgh & Gilkey, 1993; Kray & Gelfand, 2009; Walters et al., 1998). Except for the intrinsic differences between females and males, the counterpart’s differential reactions to female and male negotiators also play an important role in the way negotiations evolve (Demoulin, 2014). In particular, several studies revealed that partners treat men and women differently in negotiations, even when they negotiate identically. For instance, research showed negotiators to be four times more likely to deceive a female than a male counterpart (Kray et al., 2014). From one previous research, the authors found that men often receive better offers in negotiation (Ayres & Siegelman, 1995) and, thus, as a consequence of an anchoring effect, obtain better results at the end of the negotiation. Also, in another laboratory setting, Wood and Karten (1986) provided only the name and gender of a set of group members. They showed that more status and power were conferred on male than on female group members.

In light of the above, we deduce that male agents can get a better negotiation result even using exactly the same negotiating tactics and other factors. As a check, we also use a robot picture and no profile image in addition to a real-person female/male picture. Hence, we can test if there is any difference between “robot”, “female”, “male” and no-image agents.

Hypothesis 2: Agent profile image (referent power) will have a significant influence on result utility for agents.

Kray and Thompson (2004) have conducted a thorough review of previous articles on gender and

negotiations. They suggested that there should be power and gender interaction. That is, because women are presumed to place more weight on the maintenance of relationships, high-power women might be expected to use their power to promote joint outcomes to a greater extent than men would, whose focus would be on maximizing individual outcomes.

In a research article, Shank (2014) investigated the influence of using computers as agents on customers' perception of the representatives' power. The result suggested that the agent's computer identity moderated a customer's perception that leads to power impressions. Another study has found that gender did moderate the association between the intended opening offer (predictor variable) and the actual first offer (criterion variable) and the relationship between the intended opening offer and actual counter-offer (Miles, 2010).

Since our study considered anchor as an indicator of power, so we can safely assume that there should be an interaction between anchor (power) and agent gender. To test gender in our experiment, our computer agent can use a real person female picture, a real person male picture, a robot picture, or no profile image. We believe the agent's profile image (male, female, robot, or no image) can moderate the effect of anchoring (implicit power) on negotiation results. Using "no image" gives an impression that the opponent is trying to hide and avoid confrontation, thus making his perception as less competitive, and less "masculine". Using the robot image may give an impression the opponent is solid and uncompromising, thus making the impression more "masculine". We thus propose that in the order of no image, female, male, and robot, the masculinity will increase. According to the research of Kray and Thompson (2004), we assume that the masculinity feature of an agent will enhance the effect of power on result utility. Specifically, the impact of power on the result will be higher for more masculine agents.

Hypothesis 3: Agent profile image (reference power) will moderate the effect of anchoring on result utility for an agent.

2.4. Agent facial expression

Since Carnevale and Isen (1986) first brought scholarly attention to the importance of emotions in negotiation, researchers realized that emotion played an inevitable part in negotiation. Among all the emotional expressions, anger is the most researched (G. Van Kleef, 2010). Van Kleef, De Dreu, & Manstead (2004a) found that negotiators reduced their demands more rapidly after receiving expressions of anger from their counterparts than they did after

neutral or happy expressions. Yuasa and Mukawa (2007) found that facial expressions (happy, angry, and cool) significantly influence the receiver's impressions and decision-making.

Along with the increase in studies, many researchers have found conflicting results: in some studies, the expression of negative emotion can result in a negative outcome (Kopelman et al., 2006; Kumar, 1997), while in some other cases, the expression of negative emotion can bring about positive negotiation performance (G. A. Van Kleef et al., 2004a). Researchers argued that the Emotions as Social Information (EASI) theory could be the underlying reason (G. A. Van Kleef et al., 2004b). The key propositions from the EASI theory specify the two psychological mechanisms through which individuals can be influenced: affective reactions and inferential processes. It was theorized that affective reactions are more likely to produce effects that are symmetrical with the emotion expressed, i.e., positive effects on performance due to positive emotion. By contrast, the inferential process mechanism will likely produce asymmetrical effects (Lindebaum & Jordan, 2014; van Kleef, 2014).

Van Kleef and Côté (2018) concluded that there is no simple answer to the questions of which emotions are helpful in conflict and negotiation nor when they have a positive or negative impact on negotiation outcomes. In our case, we believe a computer agent's profile image can reflect such an agent's implicit power and influence the result utility for the agent.

Hypothesis 4: The computer agent's facial expression will influence the result utility for an agent.

2.5. Individual difference

A participant's personality is one of the sources of one's intrinsic power (Lewicki et al., 2011). Individual differences are critical determinants of how people behave in a conflict situation. One well-understood individual difference in the context of bargaining and negotiation is social value orientation (SVO). Building on Pruitt and Rubin's Dual Concern Theory (Pruitt & Rubin, 1986), SVO describes individual differences for allocating outcomes between the self and others. Dual Concern Theory postulates two kinds of concern, other-concern and self-concern. Egoistic negotiators have weak other-concern, while prosocial negotiators have strong other-concern. Self-concern is closely related to "toughness" and resistance to yielding (concession making).

Several pieces of evidence support the assumption that SVO influences negotiation results (De Dreu et al., 2000). Sequeira and Marsella (2018) also found that SVO directly influences human negotiation behavior.

From the previous research, we can find theoretical and practical support for the proposition that SVO will significantly influence the result of negotiation.

Hypothesis 5: Participant's SVO will influence the result utility for an agent. The more prosocial the participant is, the more utility the agent will gain in the end.

There is limited research on the relationship between individual differences and agent power (indicated by anchor). Most existing research has focused on the most widely tested Big-Five personality traits. In previous studies, it was found that people were more susceptible to the anchoring effect when they had low extraversion and high conscientiousness, agreeableness (Eroglu & Croxton, 2010), openness to experience (McElroy & Dowd, 2007) levels. But in the end, researchers had failed to identify any cognitive or trait variables that had a systematic and explicable effect on anchoring decisions (Furnham & Boo, 2011).

In our opinion, an agent's implicit power (indicated by anchor) will affect negotiation results differently depending on the human counterpart's intrinsic power. For example, a powerful agent may not receive a satisfying negotiation result when facing a tough human counterpart but may get a much better result when negotiating with a compromising person.

Hypothesis 6: Participant's SVO can moderate the effect of anchoring on result utility for an agent.

Another commonly used measure for individual differences is Thomas Kilmann Instrument (TKI). Thomas and Kilmann (1975) developed a conflict model and classified people's conflict behavior into five categories: competing, avoiding, accommodating, compromising, and collaborating, based on the seminal work of Blake and Mouton (1964). The five categories of TKI are formed by the participant's levels of assertiveness and cooperativeness.

However, few studies have been conducted on this topic, and they reported no influence from TKI on negotiation results (Ma, 2007; Zaremba & Kersten, 2006). Ma (2007) believes that the design of the questionnaire of TKI suppressed the variance of the five categories leaving them unable to represent their actual variance. In the TKI questionnaire, each question has no question body but only two answer options for the user to choose from. If any option is chosen, one of the five categories will get one more point in score. This means the answer to all the questions will locate in either dimension, depending on the chosen option. Compared to this kind of questionnaire, in regular questionnaires, each question reflects one aspect of one category, and the answer will reflect the level of such aspect. The way in regular questionnaires will not restrict the variability of the questions compared to TKI. Possibly, due to this

reason, previous research didn't get any significant influence from TKI on negotiation results.

We ran a Principal Component Analysis (PCA) with Varimax rotation and found that the five categories of TKI can be grouped into three principal variables: accommodating-competing, collaborating-avoiding, and compromising. Because compromising is separated from other categories, we can assume that the compromising score can reflect its own variance without being influenced by other categories. Hence, we get hypothesis 7.

Hypothesis 7: Participants' compromising score of TKI will influence the result utility for an agent.

The influence of tactic (concession curve) has already been studied in many previous studies (Lee & Chang, 2008; Vahidov et al., 2014; Wang & Chou, 2003). So we include this relationship in our model to testify to previous studies, but we will not use large pages to explain it. From the result of previous research, agents using competitive tactic should gain more utility compared to ones using conceding tactic.

Hypothesis 8: Agents' tactic will influence the result utility for an agent.

In summary, our research model is in Figure 1.

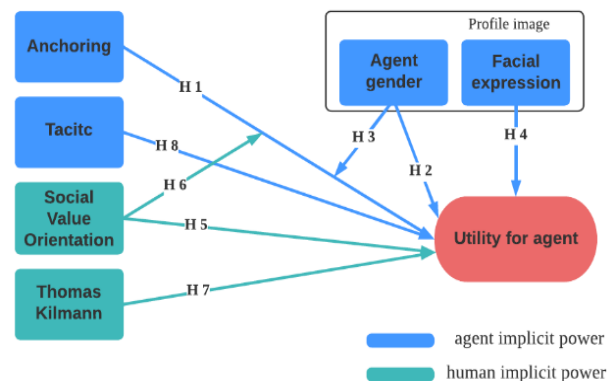


Figure 1. Research model

3. Experimental settings

3.1. Negotiation case and system

The experiment was conducted through a responsive website. The participants were asked to negotiate with computer agents to purchase a laptop over several issues: price, CPU core number, CPU microprocessor, hard drive storage, and RAM storage.

Utility was used as a scale to measure the attractiveness level of issues or the entire offers. The utility of an issue was calculated automatically based on the preference of participants or agents. These preferences were specified by the participants or the experimenter (in the case of agents) when configuring

the settings. The preference structures for agents vs. buyers are not necessarily in exact opposition. That means the opponents were not in a fixed-pie setting (Schelling, 1958). This difference in preference structures of the negotiators opens up the possibility for the buyer and agent to search for mutually acceptable agreements in a negotiation. This is called “integrative” negotiation by Brinke et al. (2015).

The agent’s tactic was set by specifying a curve that guided the agent’s concession-making behavior. Two types of time-dependent curves were chosen for this study: competitive and conceding. The curves are shown in Figure 2. The curves defined the threshold of acceptability of an offer at a given time and also served as a target utility for agent in generating a counteroffer.

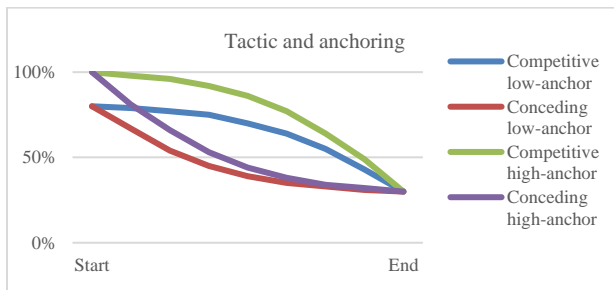


Figure 2. Concession curve for computer agent

Anchoring was manipulated in this experiment by changing the utility value of the starting offer. The agents that were using the anchoring tactic would give a starting offer with 100% utility for an agent, compared to 80% of utility for the agents that were not using anchoring manipulation. The reference points (minimum acceptable utility) for both kinds of agents were the same (30%). The agent’s utility concession curve is shown in Figure 2.

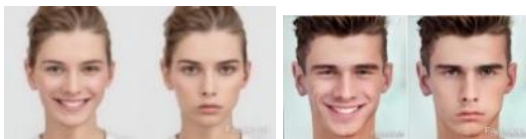


Figure 3. Computer agent's profile image

An application named FaceApp was used to generate profile images for female and male agents based on the same picture. The app enhanced the masculine and feminine features, respectively, for male and female images. The resulting is shown in Figure 3.



Figure 4. Computer agent's profile image

We also adopted a picture representing the robot and a picture with no profile image for agents. The pictures are shown in Figure 4.

3.2. Experimental procedure

The experiment was conducted in a major North American university’s business school. In the experiment, computer agents acted as sellers, while subjects took on the role of buyers. They negotiated the purchase of a laptop. There were two parts in the experiment. The first part included a survey about the participants’ personality traits such as Social Value Orientation and demographic information. The second part included the experimental task.

Participants were university students registered in an online course on the fundamentals of IT. They received email notifications from the system and were invited to register for the negotiation. Participants were randomly assigned to negotiating agent counterparts employing a specific tactic, an anchoring point, and one of the four kinds of profile images.

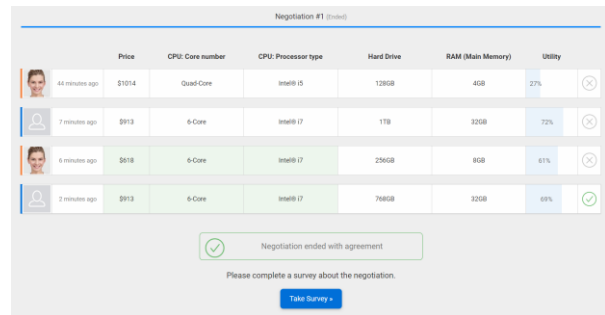


Figure 5. Negotiation process offer exchange example

The interface featuring an example offer-exchange between a participant and a software agent is shown in Figure 5. Each row shows an offer made by an agent (seller) or a participant (buyer). An offer shows the option chosen for each associated issue by the agent or buyer. The total utility is shown on the right-hand side to guide the negotiator. When an offer is made, a new row is entered and shown immediately on the screen.

In the present case, agents, acting as sellers, made the first offers to their counterparts. Buyers could then view the offer and either accept it, make a counteroffer, or terminate the negotiation session. If they accepted the offer, the negotiation would end with an agreement, and the utility would be recorded. If they terminated the negotiation, then there would be no agreement and, thus, no utility achieved. If they chose to make a counteroffer, they would see a popup window with guides to make counteroffers.

To make agents act more human-like (checking offers at non-deterministic time points), they were set to respond to their offer with a random delay between 1 and 1.5 minutes. Agents would assess the buyers' offers in terms of their utilities and accept them only if the utility matched or exceeded the target utility values as specified by the agent's tactic curve. Otherwise, they would compose new offers and continue to bargain with the buyers.

The negotiation process would continue until one of the three following actions occurred: the negotiation was terminated by the participant, the time limit was reached, or an agreement was achieved.

4. Results

There were a total of 640 subjects who finished the experimental task. Participation was voluntary, and many subjects didn't finish the whole questionnaire. If a subject left more than three questions blank, we considered them not taking the experiment seriously. After deleting these cases, we had 361 data records left. Participants' average age was 22, and 46% were males. Most were originally from North America (62.6%).

Analysis revealed that the observations were independent of each other. The distribution of standardized residual's P-P plot and histogram suggested that the errors were approximately normally distributed. ANOVA test results are listed in Table 1.

Table 1. ANOVA test results

Tested hypothesis	<i>F</i>	<i>p</i>	Result
H1: Anchor	$F(1, 345) = 13.559$	.000	Supported
H2: Agent gender	$F(2, 345) = 0.913$	.402	Not supported
H3: Anchor*agent gender	$F(3, 345) = 5.229$	.002	Supported
H4: Expression	$F(1, 345) = 0.519$	.472	Not supported
H5: SVO	$F(2, 345) = 3.577$	.029	Supported
H6: Anchor*SVO	$F(2, 345) = 3.468$	.032	Supported
H7: TK-Compromising	$F(2, 345) = 3.286$	.039	Supported
H8: Tactic	$F(1, 345) = 127.9$	.000	Supported

From the table, we can see that most of the hypotheses are supported except for H2 and H4. So in the current study, neither the agent expression nor the gender in the profile image had any significant direct effect on the negotiation result utility for agent.

For H1, our result suggested that when the agent used a higher anchor at the beginning of negotiation, the result utility was higher as well. And agent gender moderated the effect of anchor on result utility (H3). From Figure 6, one can see that for an agent using a robot picture, anchor had a more profound effect ($F(1, 44) = 14.609, p=0.00$). On the other hand, if an agent didn't use any picture as profile image, a higher anchor didn't make any difference in the result utility ($F(1,$

$46) = 0.459, p=0.501$). For "female", "male", and "robot" agents, a high anchor got significantly higher result utility for agent (Table 2).

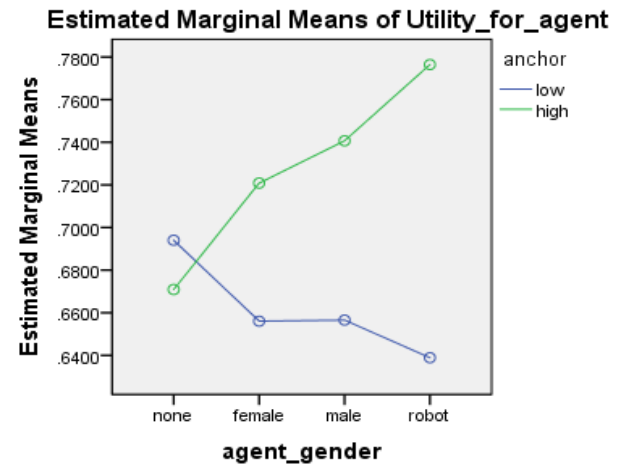


Figure 6. The interaction effect of anchor and agent gender

Table 2. Influence of anchor when agent used different profile images

Tested	Mean dif.	S.D.	<i>F</i>	<i>p</i>
Non pic agent	0.038	0.055	$F(1, 46) = 0.459$	0.501
"Female" agent	0.063	0.024	$F(1, 131) = 6.742$	0.01
"Male" agent	0.119	0.046	$F(1, 110) = 6.742$	0.011
"Robot" agent	0.144	0.038	$F(1, 44) = 14.609$	0.00

For H5, our result suggested that the human participants' SVO significantly affected result utility. The more prosocial a participant is, the higher utility an agent will get. This result is consistent with our common understanding of SVO and negotiation.

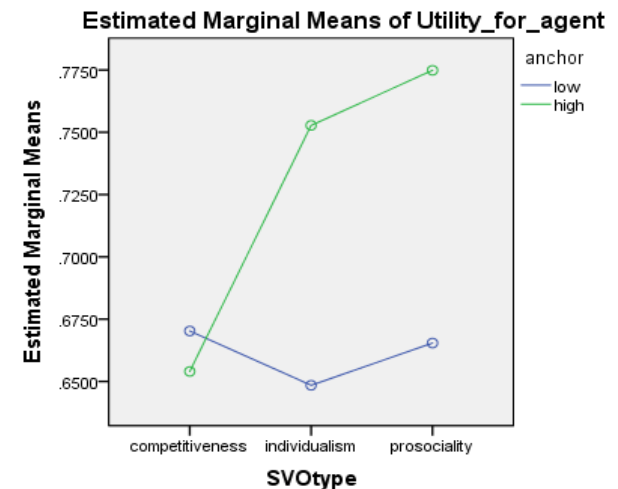


Figure 7. The interaction effect of anchor and SVO

At the same time, as an indicator of human participants' intrinsic power, SVO moderates the effect

of anchor on result utility for agent (H6). From Figure 7, we can see that, when negotiating with a prosocial or individualist type human participant, a high anchor can significantly increase the result utility for agent, while a high anchor didn't have this kind of effect when negotiating with a competitive participant (Table 3).

Table 3. Influence of anchor when participant has different SVO

Tested	Mean dif.	S.D.	F	p
Competitor	0.002	0.06	$F(1, 20) = 0.001$	0.977
Individualist	0.108	0.018	$F(1, 152) = 34.479$	0.000
Prosocial	0.107	0.015	$F(1, 180) = 51.195$	0.000

From TKI, we took compromising score as our measure in the experiment. The result of the analysis suggested that compromising had a significant effect on the result utility for agent (H7). A person who got a higher score in compromising has left the counterparty agent with more utility in the end of the negotiation.

5. Conclusion

The result research model is shown in Figure 8. From our test result, the R^2 value for the whole model is 0.44, suggesting that our model is a fair model for predicting the result utility for an agent.

Our model suggested that both the human participant's and the computer agent's implicit power have an influence on the result utility.

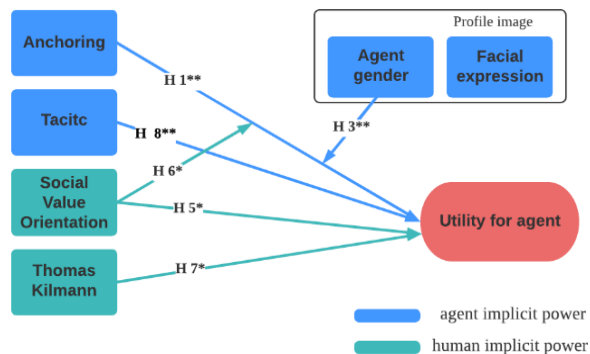


Figure 8. Result model

For computer agents, except for explicit ways of showing their power, there are also implicit ways. In this paper, we studied different ways to demonstrate power implicitly, such as using high anchors, tough tactics or profile pictures. Our result suggested that both high anchor and tough tactic will gain more utility for agent, while images didn't show significant influence on the result. This could be because the profile image we used was relatively small on the negotiating page and didn't capture enough human participants' attention. However, we did detect the

interaction between anchor and agent gender, which suggests a significant influence from profile image.

For a human negotiator, a participant's implicit power could be captured from personality traits. This personality has intrinsic power that can be measured using SVO or TKI. Our result suggested that there is significant influence deriving from participants' individual differences, and the individual differences moderate the influence of the agent's implicit power.

The major contribution of the paper is that it brings forward the construct of implicit power in the context of e-negotiations. The proposition of this implicit power can explain and clarify the conflicting results of past work. The paper proposes several variables that should be included in implicit power based on past literature. Future research can dive deeper and propose more variables to enrich the concept of implicit power.

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