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# I) Introduction

A wide variety of studies has acknowledged the ubiquitous role of emotions in shaping human cognition, behavior (Forgas, 1998; Kelly & Barsade, 2001; Keltner & Buswell, 1997; Parkinson, 1996; Thompson, 1990), as well as processes such as decision making and negotiation (Allred, Mallozzi, Matsui, & Raia, 1997; Kopelman, Rosette, & Thompson, 2006; Kumar, 1997; Morris & Keltner, 2000). Some broadly supported findings include the effect of emotions on negotiators' beliefs and preferences (Barry & Fulmer, 2004; Obeidi, Hipel, & Kilgour, 2005), information-processing (Allred et al., 1997; Hegtvedt & Killian, 1999; Shapiro, 2002), judgements (Forgas, 1998; Lupton, Hine, & Murphy, 2002), innovative thinking and creativity in solving problems (Barry & Oliver, 1996; Carnevale & Isen, 1986; Forgas, 1998). Moreover, emotions are a constant source of valuable information on the sender's beliefs, preferences and intentions (Barry, 2007; Druckman & Olekalns, 2007; Hegtvedt & Killian, 1999; Morris & Keltner, 2000; Pillutla & Murnighan, 1996; Scherer, 1986). These implications of emotions have to be researched more extensively within online communication, because the increasing importance and omnipresence of information technology in everyday life is causing an even greater reliance of people on computer-based communication, which is not devoid of emotional content. This is why electronic negotiations have become an increasingly frequent topic in the scientific research literature. With regard to this development, we are interested in the way emotions are conveyed and expressed in an online setting. Specifically, the underlying motivation of this study refers to the insufficiently explored effects of a decision support system (DSS) and a negotiation support system (NSS) on the emotional patterns that evolve within an online negotiation encounter. Keeping in consideration the seminal studies on Phase Model Theory (Douglas, 1962; Holmes, 1992), and in line with the emotional stage models proposed by Kumar (1997) and Morris & Keltner (2000), we acknowledge that online negotiations also go through a series of emotionally different phases. We thus aim to uncover specific emotional dynamics that are characteristic for successful and failed negotiations with and without DSS. In addition, we make suggestions regarding the timing of use of a Negotiator Assistant.

# A) Emotions in Negotiations: Theoretical Introduction

*"Emotion may well be not the missing link in negotiation, but in fact the very essence of it."* (Barry, 2007 p. 104)

There are countless definitions that are aimed at describing emotions and their functions. However, the majority of research has neglected to investigate their influence on the bargaining process that takes place in negotiations.

A great deal of researchers specialized in the topic of emotions in negotiations hold that its role in negotiations has been highly underestimated in the literature (Barry & Oliver, 1996; Barry, Fulmer, & Van Kleef, 2004; Kumar, 1997; Morris & Keltner, 2000; M. A. Neale & Northcraft, 1991). However, lately the interest for this issue has increased, as did the number of theoretical papers and empirical studies focused on the relationship between emotions and negotiations (see e.g. Allred, Mallozzi, Matsui, & Raia, 1997; Barry & Oliver, 1996; Kumar, 1997; Van Kleef, 2008; Van Kleef, De Dreu, & Manstead, 2004, 2010).

Beside the fact that there still is no unique view on the role of emotions in negotiations among researchers (Allred et al., 1997; Barry & Fulmer, 2004; Kumar, 1997), the generally present view on the subject is that the influence of emotions on the negotiation process is negative (Adler, Rosen, & Silverstein, 1998; Kumar, 1997; Shapiro, 2002). However, recent studies have begun to acknowledge that the influence of emotions can be positive as well as negative (O'Connor et al., 2002; Shapiro, 2002). If we look at findings from other scientific areas, such as the study of non-verbal cues in face-to-face interactions (Barry, 2007; Barsade, 2002; Morris & Keltner, 2000) or synchronous and asynchronous online communication (Friedman et al., 2004; Griessmair & Koeszegi, 2009; Pesendorfer & Koeszegi, 2006; Thompson & Nadler, 2002), we are able to conclude that emotions play a crucial role in all types of communication (Hippmann, 2009).

Negotiation, as a primary way of managing and resolving inter-personal conflict, is expected to be influenced by emotions that arise in conflict situations (Allred et al., 1997). The cognitive decision-making perspective that was dominant in the 1980s viewed the negotiator as a mere decision maker faced with a situation to resolve conflicts in a rational manner and therefore emphasized the

cognitive aspects, and neglected the emotional nature of social interaction (Adler et al., 1998; Barry & Fulmer, 2004; Kopelman et al., 2006; Morris & Keltner, 2000). In relation to this, Thomas (1992) argues that the analysis of negotiations from a strictly cognitive or economical perspective tends to excessively "sanitize" the negotiation process because it does not consider emotions and their effects. It is safe to say that recent research has come very far since the first mentions of the different processes that evolve within negotiations. We can now state with certainty that emotions are a category of influential variables whose importance for the negotiation process should by no means be underestimated (Barry & Oliver, 1996; Kelly & Barsade, 2001; Scherer, 1986).

In the first part of this thesis we will attempt to portray the major theories regarding the roles of emotions in negotiations, followed by a critical discussion of the different approaches. Then, we will provide a summary of the ways in which emotions may influence negotiators, the decisions they make and the actions they take. At the end of the first part, the reader should be aware of the importance of emotions in negotiations.

## A.1) Definitions

The study of negotiations has come very far since the 1980s, as many studies and theories published since then can confirm. Earlier studies of negotiations saw them as a sort of "problem to be solved" and the cognitive side of bargaining was at the center of the researchers' attention (Barry, 2007). Negotiation was then defined as "[…] the process by which parties with non-identical preferences allocate resources through interpersonal activity and joint decision making" (Bazerman & Carroll, 1987). However, later studies on this topic see negotiations, and specifically dyadic negotiations, as a "natural arena" for the observation and analysis of emotions and affect in general because it is essentially a form of human interaction, which has both social and emotional

implications (Barry, 2007; Barry & Oliver, 1996; Ekman, 1993; Van Kleef et al., 2010).

Due to the specific way basic emotions are experienced and expressed, emotions are sometimes referred to as “individual difference variables” (Barry & Oliver, 1996; Bazerman, Curhan, Moore, & Valley, 2000; Kelly & Barsade, 2001). At this point, a distinction between the concepts of emotion, mood and affect has to be made, although precise psychological definitions of these terms tend to be rather tricky (Forgas, 1998). Consequently, many researchers tend to use them interchangeably. Under the term “affect” a broad category of affective concepts including emotions and moods are considered (Anderson & Thompson, 2004; Barry & Oliver, 1996; Kelly & Barsade, 2001; Kopelman et al., 2006; Morris & Keltner, 2000).

Emotions are intense and discrete states that last relatively short and are mostly triggered by a specific event. Moods, on the other hand, are diffuse psychological states that have a longer duration and are less directly related to a single event (Anderson & Thompson, 2004; Barry & Oliver, 1996; Ekman, 1999; Kelly & Barsade, 2001; Kopelman et al., 2006; Morris & Keltner, 2000). They can be experienced more than once in the course of a day and may last for hours, even days (Anderson & Thompson, 2004; Baron, 1993). However, there is reason to think that moods and emotions are interdependent (Li & Roloff, 2006). For instance, someone in a bad mood is more likely to feel emotions like anger and sadness than someone in a good mood (Li & Roloff, 2006). Since emotions are a more intense form of affect, it is hypothesized that they might exert a greater effect on the negotiation than moods (Allred et al., 1997).

## A.2) Why Emotions Matter

*[…] negotiation reveals the range of human emotion.* (Morris & Keltner, 2000 p.2)

Researchers that focus on topics of social interaction hold that the traditional view of negotiations as decision-making problems that need to be solved

rationally is outdated and needs to be re-investigated (Bazerman et al., 2000; Forgas, 1998; Raiffa, 1982; Thomas, 1992). Negotiators are, in fact, influenced by a wide range of factors during the negotiation process. They are often confronted by biased information processing (Pinkley, Gelfand, & Duan, 2005), individual judgment and decision biases (Carnevale, 2007), time constraints (De Dreu, 2003) and therefore a such cannot make fully rational decisions (Thompson, 1990). Another critical aspect often mentioned in the literature is the practice of analyzing negotiations using bounded rationality and strict mathematical models (e.g. in game and decision theory) that are not able to account for the interpersonal relational dynamics that evolve in negotiations (Obeidi et al., 2005). In fact, a study by O'Connor et al. (2002) found that, when people consider how they *should* react to an interpersonal disagreement they think of rational, cool-headed responses, but when they think about what they *want* to do, they actually react in a more emotional manner. Furthermore, negotiations are an intrinsic element of human life, much like emotions, and are therefore affected by typically human characteristics which in turn make them less rational (Barry & Fulmer, 2004; Kelly & Barsade, 2001; Obeidi et al., 2005; Thompson, 1990).

While earlier research addressed mainly the social and psychological factors that influence human behavior on the level of a single negotiator (Anderson & Thompson, 2004; Carnevale, 2007), more recent studies focus on the joint interactions between negotiators (Adair & Brett, 2005; Mara Olekalns, 2002; Van Kleef & Côté, 2007). This line of research is linked to the increasing attention focused on the inter-personal effects of emotions in negotiations (Druckman & Olekalns, 2007; Morris & Keltner, 2000; Van Kleef et al., 2010), rather than focusing only on the effects of emotions in terms of intra-personal mechanisms.

That being said, it is important to mention that emotions are "dynamic in nature" (Griessmair & Koeszegi, 2009) and tend to "evolve and change over time" (p.7) within a negotiation situation (Griessmair & Koeszegi, 2009; Hippmann, 2009) influencing the negotiation process as a whole. A first step to understanding the interdependence of emotions and negotiations could be made by investigating the individual-level differences and situational variables that define the

negotiation context (Bazerman & Carroll, 1987; Bazerman et al., 2000; Kelly & Barsade, 2001; Morris & Keltner, 2000).

Emotions occur within a relationship (Shapiro, 2002) and, thanks to them, relationships are built and sustained (De Dreu, Weingart, & Kwon, 2000; Morris & Keltner, 2000; Pesendorfer & Koeszegi, 2006) because negotiators use them to communicate their identity concerns to their negotiation partner (Shapiro, 2002), or even use them to fix damaged relationships (Hegtvedt & Killian, 1999). Shapiro (2002) argues that emotion assumes a „forward-looking communicative function“ (p.6) and according to Morris & Keltner (2000) they are „interpersonal communication systems“ (p.1) that assist in the search for solutions of problems that arise in dyadic and group negotiations. Although emotional expressions constantly evolve and change in the course of a negotiation, they serve negotiators to draw conclusions about their sender by detecting and analyzing the information in the exact moment it is retrieved (Morris & Keltner, 2000). Thus, emotions may help to resolve relational problems that arise in negotiations, such as hierarchy and trust, promote a positive relationship between the parties and future commitment between them (Hegtvedt & Killian, 1999; Lawler & Yoon, 1993). In situations of relational uncertainty about the counterpart, his intentions and the situation in play, people usually make use of their personal judgement, whose formation is closely related to one's emotions. In this case, emotions as sources of information compensate for the missing information in order to avoid problems that may arise (Allred et al., 1997; Morris & Keltner, 2000; Daniel Shapiro, 2002). Similarly, judgements of responsibility may influence the emotional regard for the counterpart that will in turn influence the desire to cooperate in the future with the same person (Allred et al., 1997). Perceptions of justice, both distributive and procedural, also affect emotions and thus the relationship between the negotiators (Kumar, 1997), as justice gives direction to our feeling of what is right and what is not (Solomon, 1989). Similarly, emotions are also affected by expectations one has about the negotiation process and outcome (Barry & Oliver, 1996; Mara Olekalns, Robert, Smith, & Carnevale, 2005). .

Emotions are also known to impact the evolvement of the negotiation process in that they impact the negotiators' beliefs and preferences (Barry & Fulmer, 2004;

Obeidi et al., 2005; Van Kleef, 2008), judgements (Forgas, 1998; Lupton et al., 2002) and risk-taking behavior (Isen & Patrick, 1983). More importantly, emotions influence the way in which negotiators process information relevant to the negotiation (Allred et al., 1997; Hegtvedt & Killian, 1999; Shapiro, 2002).

One of the most important characteristics of emotions in the negotiation context is in fact their informational character, which allows them to transmit important messages pertaining to their sender, his/her emotions, beliefs, preferences and intentions and to information about the contextual (i.e. situational) environment (Barry, 2007; Butt, Choi, & Jaeger, 2005; Druckman & Olekalns, 2007; Hegtvedt & Killian, 1999; Melo, Carnevale, & Gratch, 2011; Morris & Keltner, 2000; Overbeck, Neale, & Govan, 2010; Van Kleef, De Dreu, & Manstead, 2004a; Van Kleef et al., 2010). Negotiation situations are typically characterized by a lack of relevant information (Hippmann, 2009), be it information about the issues in stake or information about the counterpart. The negotiator therefore compensates by making use of information provided by his own judgment, which in turn is affected by his own emotional evaluations of the counterpart, the negotiation situation and the issues at stake (Parkinson, 1996; Thompson, 1990). In this way, emotions also create additional information that was not present before (Ekman, 1993; Morris, Nadler, Kurtzberg, & Thompson, 2002; Pillutla & Murnighan, 1996; Scherer, 1986; Van Kleef, De Dreu, & Manstead, 2004a; Van Kleef et al., 2010)

In a negotiation situation, emotions tend to signal that the events or issues related to the negotiation are important to the negotiator (Frijda, 1988; O'Connor et al., 2002), and they help the negotiator prioritize his/her goals in order to respond to changes in the environment more readily (Frijda, 1988; Van Kleef et al., 2010). Further, emotional expressions are known to evoke complementary (e.g. expressions of anger that evoke fear) or reciprocal (e.g. expressions of pleasure that evoke pleasure) emotions in counterparts and act like „[...] positive or negative reinforcers for others' behavior" (Van Kleef, 2008 p.5).

In conclusion, there is wide agreement in the literature that negotiators' affect exerts a strong effect on negotiations as it shapes social behavior (Frijda, 1988), negotiations (Anderson & Thompson, 2004; Mara Olekalns, 2002) and

coordinates social interaction within the negotiation context (Morris & Keltner, 2000). One's tendency to experience and express emotions can greatly affect his/her behavior in negotiation situations, the way others see him/her and the negotiation outcome (Anderson & Thompson, 2004). As a result of these findings, negotiators need to keep in mind the importance emotions have in relation to negotiations and they need to be aware of the advantage they could have over others if they learned to deal with them properly (Daniel Shapiro, 2002, 2005). To quote the German philosopher Nietzsche (1886/1996): "The will to overcome an emotion is ultimately nothing but the will of another – or several other – emotions".

## A.3 Basic Effects of Emotions

The first empirically relevant research on the topic of the effect of emotions on negotiations is represented in a seminal study by Carnevale & Isen (1986), where "[…] the combined effects of mood and visual access between negotiators on the process and outcome of an integrative bargaining task" were at the center of the investigation (Barry, 2007 p.98). Carnevale & Isen (1986) found that positive affect tends to reduce the use of contentious negotiation tactics and increases joint profits, for both negotiations with and without visual access. Even for situations where negotiators express negative emotions, a visual barrier helps to promote cooperation and more integrative behavior (Carnevale & Isen, 1986).

The understanding of positive and negative emotions is of great importance, as is the interpretation of the wide range of effects they have on human behavior. The basic emotions perspective introduced by Ekman (1999) argues that traditionally positive, or traditionally negative emotions differ one from another in a number of ways. This perspective is contrary to the traditional view that sees all emotions as equal, differing only in terms of the level of intensity or pleasure they express. Furthermore, several other studies have shown that the effects of emotions cannot be only viewed in terms of their positive or negative valence

(Butt et al., 2005; De Dreu, Baas, & Nijstad, 2008; Lerner & Keltner, 2001; Van Kleef et al., 2010), but the greater picture has to be observed. Lerner & Keltner (2000) highlight how emotions that have the same valence, like anger and fear, can have a completely different effect on cognitive processes like risk perception and preferences. The deeper significance of the diverse emotion effects on negotiations is especially evident when one observes the inter-personal effects of discrete emotions in different negotiation contexts (see e.g. Van Kleef et al., 2010) and negotiation phases (see e.g. Barry & Oliver, 1996).

In the next section we will attempt to describe some of the most important positive and negative effects of different discrete emotions.

### A.3.1 Positive Effects of Emotions

First of all, it is necessary to emphasize that both positive and negative emotions can exert a positive influence on a negotiation and its participants (see e.g. Kumar, 1997). Thus, we propose to start with the discussion of the positive effects of traditionally positive emotions, and then turn to the discussion of the positive effects caused by negative emotions.

Speaking in general terms, positive emotions tend to affect the decision making process positively by inducing positive moods and behaviors, promoting a good rapport with the counterpart and fostering a good negotiation environment (Kumar, 1997). Moreover, positive affect acts as a signal of the negotiator's intentions and therefore is a source of information to the counterpart (Adler et al., 1998; Kumar, 1997); increases preferences for cooperation and causes higher joint gains and outcomes (Allred et al., 1997; Anderson & Thompson, 2004; Barry & Oliver, 1996; Carnevale & Isen, 1986; Forgas, 1998; Kumar, 1997); instigates out-of-the-box thinking which in turn induces the adoption of creative problem solving strategies that lead to innovative solutions of negotiation issues (Barry & Oliver, 1996; Carnevale & Isen, 1986; Forgas, 1998); facilitates the development of relational commitment and promotes future

business relationships (Druckman & Olekalns, 2007; Kopelman et al., 2006; Lawler & Yoon, 1993); promotes persistence when dealing with issues of ambiguous character and increases the confidence level of the negotiator (Kumar, 1997) and increases negotiators' confidence (Kramer, Newton, & Pommerenke, 1993).

Another important effect of positive emotions is the increase of trust between negotiators. If a negotiator has trust in the negotiation situation, his counterpart, or the fairness and quality of the negotiation outcome, this will lead to more cooperative behavior through open information exchange and finally, will result in more win-win solutions (Anderson & Thompson, 2004; Carnevale & Isen, 1986). Negotiators that exhibit a lot of positive emotions may be seen by their counterparts as more cooperative and trustworthy, which increases trust in the relationship and triggers reciprocal exchange of interests and priorities (Anderson & Thompson, 2004; Carnevale & Isen, 1986).

The level of power one possesses may have large implications for the issue of trust between negotiators, as less powerful negotiators tend to be more anxious about trust than individuals that possess more power. Consequently, the less powerful individuals will be constantly looking for signals that they could trust the other party (Anderson & Thompson, 2004). Powerful individuals, on the other hand, will be less motivated to look for and process social information about others as they will rely mainly on stereotypes and information that is consistent with their initial expectations about the partner (Anderson & Thompson, 2004; Van Kleef, De Dreu, & Manstead, 2004a). Since positive emotions are a signal of one's trustworthiness, less powerful individuals in a power-imbalanced negotiation would be very sensitive to these trust-signals, whereas powerful negotiators should be less responsive to the other's positive affect. This suggests that powerful individual's positive affect is more efficient in predicting trust and integrative outcomes between the negotiators (Anderson & Thompson, 2004).

Not only positive emotions can affect the negotiation positively, negative emotions can sometimes benefit the negotiation as well, although this fact used to be ignored in the past (Barry et al., 2004). First of all, negative affect sends a

signal that the current situation is unhealthy, and consequently motivates the parties to make a change (Kumar, 1997). In a negotiation setting, anger can serve to highlight the importance of an issue to the counterpart, or it may even be used to restore or strengthen a broken relationship (Friedman et al., 2004; Kumar, 1997; Morris & Keltner, 2000). Anger works well in bargaining situations in cases where the other negotiator's limits are lower and when he/she has less alternatives and has more to lose, so the consequences of rejection are high (Friedman et al., 2004; Kopelman et al., 2006; Sinaceur & Tiedens, 2006). There is evidence that negotiators tend to make more concessions when faced with an angry as opposed to a neutral or happy counterpart because they believe the angry counterpart to be more ambitious in his negotiation goals (Van Kleef & Côté, 2007; Van Kleef, De Dreu, & Manstead, 2004b) or because they perceived them to be tougher (Sinaceur & Tiedens, 2006). Anger therefore may be efficient in claiming value and eliciting cooperation (Van Kleef, De Dreu, & Manstead, 2004b).

Also, a display of embarrassment or shame can serve a reconciliatory function and therefore have a positive effect on the (damaged) relationship (Keltner & Buswell, 1997; Morris & Keltner, 2000). In cases when a negotiator violates the terms of the negotiation, his guilt may motivate him to restore the relationship bonds and make him adopt a more cooperative and integrative approach (Keltner & Buswell, 1997; Morris & Keltner, 2000). Expressing pain or distress after being cheated by the other party also induces cooperative behavior from the counterpart (Morris & Keltner, 2000). Last but not least, a debilitating emotion like jealousy can also have a positive effect by causing less interest in others and consequently promoting stable committed relationships (Morris & Keltner, 2000).

In line with these findings, we can conclude that different emotions can have a positive influence on the way we and our counterparts act and react in negotiations and on the relationship that stems from this interaction.

### A.3.2 Negative Effects of Emotions

*Anger makes dull men witty, but it also keeps them poor.* (Queen Elizabeth I)

As in the case of the positive effects of some emotions mentioned earlier, negative effects can be also caused by either positive or negative emotions.

More specifically, there are a number of positive emotions whose experience or expression may affect the negotiation negatively. Adler et al. (1998) argue that negotiations usually start off in a pleasant manner, as negotiators look forward to claiming value in the future. After they find themselves caught in the bargaining process, they might realize that they have acted irrationally. Thus, this shows that the negotiator's perception of himself is distorted (Adler et al., 1998). Negotiators should, therefore, avoid hasty judgements of any kind and be aware of the possibility of the so called „negotiator's bias“ which induces the feeling of supreme honesty and fairness in negotiators (Adler et al., 1998).

A similar effect was studied by Kramer, Newton, & Pommerenke (1993), who found that positive affect tends to enhance self-confidence and self-evaluation of performance. Although this so called „self-enhancement bias“ may have positive consequences, it may also lead to more problematic negotiations, in terms of distorted views of own strategies and behavior and neglect of important information from others as a result of the near-sightedness caused by the bias (Adler et al., 1998; Thompson, 1990; Thompson, Neale, & Sinaceur, 2004). It has also been found that negotiators in good mood tend to overestimate themselves on important attributes, they have higher expectations of their counterparts and of the final outcome, which sets them up for failure (Bazerman et al., 2000; Carnevale, 2007; Forgas, 1998). Personal ties between negotiators may have a similar effect on the negotiation, by fostering high expectations of one another that might be impossible to fulfill in the long run (Barry & Oliver, 1996). Positive affect may also give the negotiator the image of a soft bargainer which is not advantageous, especially when the stakes are high and the situation calls for tough bargaining (Kumar, 1997). Furthermore, as a result of his/her very good mood, a negotiator may be more gullible and susceptible to deception and tricks from the other party (Kumar, 1997).

Although it has been found that positive affect influences one's ability to solve problems creatively (Carnevale & Isen, 1986; Isen, Daubman, & Nowicki, 1987), there is indication that negotiators in a good mood do not use their creativity and problem-solving skills to strategically and critically choose a counterpart (Barry & Oliver, 1996). Similarly, positive affect causes people to view the world more optimistically and accept arguments that would otherwise be considered as weak, whereas people influenced by negative affect tend to be more critical in questioning their counterpart's arguments (Kumar, 1997).

Generally, negotiations characterized by negative emotions are a sign of incompatibility between negotiators. Negative emotions, having more dimensionality (Barry & Oliver, 1996) and survival potential (Adler et al., 1998), establish a dynamic, mutually-reinforcing negative effect on the negotiation as a whole, making impasse increasingly possible (Kumar, 1997). When conflicts arise as a result of negative emotions, negotiators may hold that his/her opponent's actions are not compatible with his/her own goals, which may cause even more negative emotions (Obeidi et al., 2005).

As far as the negative effects of negative emotions are concerned, the most studied emotion in the literature is anger. The reason is that anger is one of the strongest and pervasive negative emotions that is often inevitable in conflict situations (Van Kleef & Côté, 2007). Frustration, as a lighter version of anger, appears in situations where the achievement of a goal is simply postponed by accidence. The difference between anger and frustration is that anger may lead to physical violence, whereas frustration only motivates the individual to retaliate (Obeidi et al., 2005). Fear, on the other hand, can immobilize the negotiator and render him incapable to react in any way. One method often used to deal with fear, beside avoidance is the use of anger (Obeidi et al., 2005). In terms of intrapersonal effects, anger may cause lower regard and respect of others' interests and may even influence one's judgements regarding those interests (Allred et al., 1997); may result in more competitive and distributive strategies and tactics (Mara Olekalns, Smith, & Lau, 2002); and may cause negotiators to reject offers and end up with less than optimal deals (Pillutla & Murnighan, 1996). However, when the expression of anger is interpersonal, negotiators tend to evaluate their counterpart and the whole

negotiation unfavorably (Van Kleef, De Dreu, & Manstead, 2004b); the interpersonal ties get damaged by eliciting fear or anger in the opponent and by making a negative impression, which lowers joint gains, heightens the incidence of impasse and affects negatively the will to interact again in the future (Allred et al., 1997; Friedman et al., 2004; Morris & Keltner, 2000; Van Kleef & Côté, 2007). Contrary to findings that indicate a positive effect of anger on concession making (see e.g. Sinaceur & Tiedens, 2006 and Van Kleef, De Dreu, & Manstead, 2004b), some studies have found that negotiators are less likely to concede to a counterpart that displays negative emotions rather than positive emotions and that they might even respond with anger themselves, thereby increasing the possibility of an impasse (Friedman et al., 2004; Kopelman et al., 2006). Anger is therefore inefficient in creating value and rarely leads to reconciliation and mutual agreements, especially when it is reciprocated, which is a plausible scenario since expressions of anger are often perceived as expressions of hostility and arrogance (Allred et al., 1997; Forgas, 1998; Friedman et al., 2004; Van Kleef, De Dreu, & Manstead, 2004b). Finally, anger affects the will to cooperate together to solve disputes, by motivating the parties to focus on ways to retaliate, instead on ways to improve the joint status quo (Pillutla & Murnighan, 1996; Thompson & Kim, 2000).

In conclusion, it is important to keep in mind that positive, as well as negative emotions can act as a deterrent to cooperation and successful joint outcomes in the negotiation context in a number of different ways.

## A.4 Emotions in Negotiations: Review of Dominant Approaches

*"Emotions, at their most basic are not only impulses to act, but they are also the feelings that trigger these impulses."* (Callahan, 1988)

If we observe the empirical literature published until now, we can distinguish two main approaches to assessing emotions in negotiations: (a) the one emphasizing the predictive role of emotions as antecedents of negotiations, and

(b) the one focusing on the role of emotions as consequences of negotiations (Barry et al., 2004; Morris & Keltner, 2000).

There is a vast theoretical and empirical body of research that views emotions as a behavioral trigger, which as such can be used to predict outcomes (see e.g. Butt et al., 2005), however emotions are also often seen as experienced consequences of negotiators' behavior (see e.g. Carnevale & Isen, 1986). We will address both perspectives in the next two sections of this thesis.

### A.4.1 Emotion as Antecedent of Negotiation Behavior

In spite of the cognitive perspective of analysis of negotiation behavior and outcomes that was popular at the time, it was first suggested by Frijda (1986) that emotions in fact lead people to engage in specific behavior affected by the person's needs. Research by Carnevale & Isen (1986) and Sutton & Rafaeli (1988), that was published not long after, provide first confirmation of this relationship between mood and individuals' behavior and decision making. In addition, the new generation of researchers not only supports these findings, but also provides further insight into this deep-rooted relationship (see. e.g. Allred et al., 1997; Butt et al., 2005; Forgas, 1998; D Keltner, Locke, & Aurain, 1993; Kramer et al., 1993; Kumar, 1997; Lerner & Keltner, 2001; Obeidi et al., 2005; L. Thompson & Kim, 2000). Hence, it is widely evidentiated that emotional states and expressions of negotiating parties can be used to predict negotiation outcomes.

The distinct links between discrete positive and negative emotions and individual behavior, information processing and other critical processes that people undergo in the negotiation context have been amply researched and documented (Anderson & Thompson, 2004; Barry & Fulmer, 2004; Carnevale & Isen, 1986; Forgas, 1998; Kopelman et al., 2006; Kramer et al., 1993; Kumar, 1997; Sinaceur & Tiedens, 2006). Specifically, positive emotions affect information processing, induce creative problem solving, cooperative behavior

and concession making (Carnevale & Isen, 1986; Forgas, 1998; Kramer et al., 1993), flexibility and concern for the other party (Barry, 2007; Forgas, 1998; Schroth, Bain-Chekal, & Caldwell, 2005), which potentially results in integrative bargaining behaviors and outcomes (Allred et al., 1997; Barry, 2007; Barry & Oliver, 1996) and acts as a predictor of joint gains (Anderson & Thompson, 2004). On the other hand, negative affect tends to drive people to be more competitive, rigid, pessimistic, less creative and less eager to be of help to others (Allred et al., 1997; Bazerman et al., 2000; Forgas, 1998; Schroth et al., 2005).

In negotiations, frequent interaction with the same actors are very common, which often leads to development of relational and affective commitments between them (Lawler & Yoon, 1993). Cooperative behavior and mutually-beneficial gains that stem from positive emotional regard have been shown to have a positive effect on the ongoing and future business relationship (Allred et al., 1997; Mara Olekalns et al., 2002). Several scholars have also argued that the effects of emotions on the ongoing relationship could even be more important than the results of the negotiators' pursuit to claim and create value (Allred et al. 1997).

Since emotions are considered to be a stronger and more intense type of affect than mood, we can expect their influence on negotiations to be even more pronounced (Allred et al., 1997). Furthermore, emotions provide more information than general affective states (Van Kleef et al., 2010). Mood, as a prolonged affective state, is presumed to be a situational setting (framing) that affects negotiator's actions by altering his perceptions, expectations and judgements, and finally his decisions and the final outcome of the negotiations (Barry & Oliver, 1996; Carnevale, 2007; Forgas, 1998; Thompson, 1990). Literature on emotions thus provides ample evidence of their predictive role that emerges from their ability to predict various cognitive, perceptual and behavioral processes that are essential antecedents of negotiation behavior (Butt et al., 2005; Lerner & Keltner, 2001). In fact, in a study by Butt et al. (2005), the authors found that emotions stemming from the negotiator, as well as from his counterpart, affect the negotiators'' behavior and negotiation outcome directly as a result of this. For example, they found that negotiator

gratitude and counterpart anger reduced personal gains, while joint gains were decreased by combinations of negotiator pride-achievement and counterpart gratitude and anger emotions (Butt et al., 2005). Hine, Murphy, Weber, & Kersten (2009) found that positive linguistic emotional expression can predict e-negotiation success and Brett et al. (2007) show that expressions of emotions through words used in disputes affect the likelihood of agreements.

Whereas earlier research on mood effects on decision making involved conditioning methods or psychological mechanisms and mood manipulations (see e.g. Carnevale & Isen, 1986), contemporary research relies mostly on cognitive explanations of the affective influences on negotiation. Specifically, affect is found to have influence on two cognitive processes: (a) informational effects, that arise when mood informs others about what a person is thinking, and (b) processing effects, that arise when mood affects the way in which a person thinks (Forgas, 1995, 1998). These are the two fundamental facets of the Affect Infusion Model (AIM) proposed by Forgas (1995), which argues that affect infusion into people's decisions and judgements influences not only the way they process information, but also the way they (re)act and the effect grows stronger as the complexity of the situation increases. It is hypothesized that mood can either directly influence the negotiation by influencing the level of cooperation between the parties or by indirectly affecting their level of cognitive flexibility (Forgas, 1995, 1998).

In Van Kleef et al.'s (2010) Emotions as Social Information Model (EASI), the authors emphasize the importance of the social context in which negotiations take place for the effects emotions may exert on them. Specifically, they propose that the same emotions could have completely different effects in predominantly cooperative and competitive settings. According to the model, people faced with a counterpart that expresses happiness tend to respond similarly when they find themselves in a cooperative setting, whereas in competitive settings, people tend to take advantage of their counterpart because they perceive his easy-goingness as a sign of a weak bargainer (Kumar, 1997). Counterpart's expressions of anger also have a different effect depending on the contextual setting. Anger normally reduces cooperation in a cooperative context, but it encourages it in competitive settings because anger

indicates toughness, ambition and high limits (Sinaceur & Tiedens, 2006; Van Kleef, De Dreu, & Manstead, 2004b). Emotions do not exert an absolute and definitive influence on the negotiation, as highly affective situations often tend to greatly depend on the situation itself, rather than on the emotional expressions of its participants (Parkinson, 1996). Hence, the predictive effects of emotions on negotiations may be mediated by the cooperative/competitive or integrative/distributive context in which the emotions are elicited, and only a fistful of authors have acknowledged this so far (Carnevale, 2007; Druckman & Olekalns, 2007; Lawler & Yoon, 1993; Van Kleef et al., 2010).

In addition to the effects of emotions we experience, the emotions we express to our counterparts influence not only their actions, but their feelings as well, which results in the development of a dynamic spiral of affective influence (Hippmann, 2009). The study and analysis of the predictive role of emotions may lead to a better understanding of the relational and emotional dynamics that occur and may result in the generation of possible solutions of problems that arise in the negotiation context.

### A.4.2 Emotion as Consequence of the Negotiation Interaction

Emotions do not just have a strong predictive characteristic, but they are also consequences of events, or even words, that had transpired as a result of the negotiation interaction. As Lupton et al. (2002) notice: „[…] emotions are directed at objects and elicited by events.“ (p.85). In this context, it is important to analyze emotions not only as consequences of events in the negotiation that affect the individual, but also as consequences of others' emotional expressions (Barry & Fulmer, 2004; Morris & Keltner, 2000; Parkinson, 1996).

Kumar (1997) argues that origins of affect can be grouped into three categories; namely, the image one has of his counterpart, the perceived procedural and distributive justice, and differences based on the cultural affiliation of negotiating parties. The perceived image one has of his/her counterpart is construed by a

number of different variables such as status, power, gender, prior experience, group membership etc. (Hegtvedt & Killian, 1999). In a negotiation context, should the two parties have the same image (be it positive or negative), they are bound to reinforce each other to the point of strengthening the prevalence of positive or negative affect in the negotiation (Kumar, 1997). On a similar topic, emotions can positively or negatively reinforce others' behavior (i.e. positive emotions might be a sign that what was done was correct and one should continue in the same manner, whereas negative emotions might signal that something is wrong and that an adjustment is required) (Cacioppo & Gardner, 1999; Van Kleef, 2008; Van Kleef, De Dreu, & Manstead, 2004b).

Acknowledging that negotiations are social processes charged with powerful emotions, researchers hold that emotions that arise as consequences of interpersonal interaction are very likely to be stronger than outcome-based emotions (Srull, Berkowitz, & Averill, 1993). Positive affect as a result of prior experience with the same counterpart is shown to result in less extreme initial offers, but if the positive affect is induced by other factors (e.g. setting, disposition), it tends to increase confidence and expectations and results in more profitable initial offers (Barry & Oliver, 1996). Similarly, repeated success in interactions with the same opponent is likely to generate positive emotional reactions and commitment behavior (Lawler & Yoon, 1993).

A great number of researchers argue that identifiable relational and interpersonal problems trigger emotions (Barry & Fulmer, 2004; Lazarus, 1991; Morris & Keltner, 2000; Parkinson, 1996). For instance, anger can be provoked by a meeting that starts late (Adler et al., 1998) or is being interrupted (Morris & Keltner, 2000), by being faced with excessive demands, misrepresentation or overstepping authority (Adler et al., 1998). Fear is another emotion that arises in negotiations in a variety of situations, like bargaining without sufficient preparation, interaction with an angry counterpart with superior bargaining power or plain insecurity in own abilities (Adler et al., 1998; Morris & Keltner, 2000).

Hegtvedt & Killian (1999) investigated the link between emotions and perceptions of justice using Homans's (1974) arguments about emotional

responses to (in)justice. Homans's (1974) main argument is that when people are treated fairly, they will experience positive emotions; if they are under rewarded, they will be angry; and if over rewarded, they will feel guilty. While these findings concern issues of distributive justice (i.e. fairness of outcomes), little research on emotions has been dedicated to concerns of procedural justice (i.e. fairness of processes) even though it is presumed to cause more intense emotions that last longer than emotions stemming from distributive (in)justice (Kumar, 1997). Research on procedural justice found that negotiators who perceive the negotiation process as fair are more likely to experience pleasure. However, negotiators who are dissatisfied with the fairness of the encounter are more likely to express anger and resentment as a result of this (Hegtvedt & Killian, 1999). Using an ultimatum game experiment, Pillutla & Murnighan (1996) argued that when respondents are informed about the (un)fairness of an ultimatum offer, they feel angry, act spitefully and consequently reject the offer.

Expression of strong emotions however may not only be a consequence of conflicts or relational problems, but it also may demonstrate the high importance of a specific issue to one of the negotiators, especially in the case of anger expression (Frijda, 1986; Lazarus, 1991; O'Connor et al., 2002). Finally, emotional expressions are almost always triggered by the economic outcomes of negotiations, which may influence behavior and the relationship with the same counterpart in the future (Barry & Oliver, 1996). Emotions can therefore be triggered by a wide variety of events, behavioral and cognitive processes and other emotions. Negotiators should be aware of the ways of dealing with emotions that hinder their profits and future relationships and of the ways of taking advantage of emotions that might benefit them.

### A.4.3 An Integrated View of the Two Approaches

Both perspectives discussed in the previous chapters emphasize the significance of emotions within a negotiation context. „Developing a deeper knowledge of the role emotions play in negotiations requires developing an understanding of how those emotions are both triggered and communicated“ (Schroth et al., 2005 p.124). In line with this rationale, Griessmair & Koeszegi (2009) address the specific dynamic of negotiation interaction and deduce that successful outcomes are not only a result of positive emotions, but also a cause for them.

These predictive and outcome effects of emotions can often overlap during the encounter due to the fact that emotional processes evolve quickly from one emotional state to another (Griessmair et al., 2009), therefore requiring that emotions be regarded as cause as well as consequence (Scherer, 1986). Broekens & Jonker (2010) define emotions as “valenced reactions to events, agents, or objects, with their particular nature being determined by the way in which the eliciting situation is construed” (p.5).

While we acknowledge this twofold nature of emotions, we also argue that emotions have an inherent dynamic character which cannot be disregarded (Carnevale & Isen, 1986; Frijda, 1986; Homans, 1974; Kumar, 1997; Sutton & Rafaeli, 1988). That is why we devote our attention to the study of the complex emotional patterns that evolve and change throughout different phases of the negotiation process.

## A.5 Relational Aspects of Emotions: Emotional Contagion and Reciprocity

A large body of research focused on the effects of an individual's emotions on negotiation behavior, strategic behavior, concession making, future business relationships and joint gains (see e.g. Allred et al., 1997; Barry & Oliver, 1996; Carnevale & Isen, 1986; Forgas, 1998; Kumar, 1997), and made a significant contribution to emotion research. Nevertheless, these studies do not account for

how one person's emotional behavior is influenced by their counterpart's emotions (Barry et al., 2004; Van Kleef, De Dreu, & Manstead, 2004a; Van Kleef et al., 2010). The acknowledgment of the importance of affective processes such as emotional contagion and reciprocity that arise in negotiations is crucial for a complete understanding of the interpersonal emotional dynamics between negotiators.

Research shows that people tend to mimic their partner's emotional expressions automatically up to the point of feeling what their partner feels. This process occurs when people „catch“ the other person's emotions through mimicry of their vocal and facial expressions, grimaces, postures and bodily movements (Anderson & Thompson, 2004; Moll, Jordet, & Pepping, 2010; Thompson, Nadler, & Kim, 1999; Van Kleef et al., 2010) or through text-based emotional expressions in online negotiations (Friedman et al., 2004; Thompson & Nadler, 2002; Van Kleef, De Dreu, & Manstead, 2004b). People, therefore, tend to „catch“ the emotions of others, which involves actually feeling what the other person feels by perceiving and interpreting others' emotions and responding similarly (Hatfield, Cacioppo, & Rapson, 1994; Thompson et al., 1999). Contagion research stresses that individuals use various methods to gain information about others' emotions, but by paying attention to one's own feelings in company of others, individuals can obtain invaluable information about others' emotional states (Hatfield et al., 1994). Kopelman et al. (2006) found that the strategic display of emotion will influence the target negotiator's actions, judgments and emotions through emotional contagion, but whether he/she judges the expressed emotions correctly depends on the type of emotion expressed. In their study of the effects of emotional transitions in negotiations, Filipowicz, Barsade, & Melwani (2011) found that perceivers of the happy-angry transition of their counterpart, tend to catch the pretransition happiness which mediates the subsequent anger in the post transition period (p.553). There is also indication that emotions can influence the judgment of third-party observers, especially when negotiators' emotions are positive (Thompson & Kim, 2000). In fact, evidence suggests that emotional contagion is less common in competitive settings, where negotiators usually use strategic inferences to obtain information from their counterpart's emotional expressions

instead (Van Kleef, De Dreu, & Manstead, 2004b; Van Kleef et al., 2010). In cooperative settings, emotional contagion tends to influence social decision making and plays a part in facilitating cooperation by expression of positive emotions, and undermining it by expression of negative emotions (Barsade, 2002; Van Kleef, De Dreu, & Manstead, 2004b; Van Kleef et al., 2010).

Emotional contagion does not only affect individual- or dyad-level behavior, but it also has a great effect on the group-level dynamics (Barsade, 2002). Barsade (2002) showed that positive emotional contagion influences cooperation, decrease conflicts and improved task performance as perceived by the individual and others, whereas negative contagion has the opposite effect. Moreover, emotional contagion seems to not only affect the emotions of group members, but it also has an effect on the future group dynamics (Barsade, 2002; Kelly & Barsade, 2001).

Researchers that investigated the effects of emotional contagion hold that emotions can be directly transferred from one individual to another. On the other hand, studies of reciprocity in negotiations suggest that emotional expressions may provoke corresponding emotional expressions from the other party, that in some cases may result in escalated conflicts and conflict spirals (Brett, Shapiro, & Lytle, 1998; Parkinson, 1996; Putnam & Jones, 1982). Reciprocity occurs when negotiators reciprocate (i.e. return in kind) their counterpart's „[…] integrative (win-win) communications (e.g., multi-issue offers), distributive (win-lose) communications (e.g., threats), procedural statements, and affective statements“ (Brett et al., 1998 p.411; Putnam & Jones, 1982; Weingart, Bennett, & Brett, 1993). Because it is considered a norm and part of human instinct, understanding the effects of reciprocity is considered critical for making a move from distributive to integrative bargaining and breaking conflict spirals. (Brett et al., 1998; Butt et al., 2005; Putnam & Jones, 1982). The norm suggests that in most cases, a negotiator's cooperative behavior will be responded to with cooperativeness, and competitive behavior will be responded to with competitiveness (Hatfield et al., 1994; Weingart et al., 1993). Indeed, when faced with counterpart's integrating, compromising and dominating behavior, negotiators tend to respond in a similar manner (Butt et al., 2005). However, as hypothesized by Van Kleef, De Dreu, & Manstead

(2004a,b), dominating behavior like the expression of anger can also trigger yielding behavior and concession making, which constitute non-reciprocal responses. Similarly, it was found that negotiator's yielding triggered dominating behavior in the counterpart (Butt et al., 2005). Expression of guilt may also induce one to reciprocate with cooperativeness, but it may provoke exploitation as well (Van Kleef, 2008).

Assuming that both emotional contagion and reciprocity work both ways, it is reasonable to assume that they might result in an accumulation and escalation of emotions of all the participants in the negotiation encounter (Parkinson, 1996). Thus, there is a need to manage these processes strategically by simply not reciprocating contentious statements or combining them with noncontentious communications (Brett et al., 1998).

## B) Online Negotiations

The increasing need to cope with conflict via multi-issue negotiations coupled with the growing pervasiveness of information technology in the last two decades, has resulted in a need to understand the technologies that were designed to facilitate this process of interaction (Derks, Fischer, & Bos, 2008; Griessmair & Koeszegi, 2009; Morris et al., 2002; Rangaswamy & Shell, 1997; Thompson & Nadler, 2002). The following chapter dealing with negotiations conducted online is intended to outline the recent theories and principles and major empirical findings in the literature on this subject.

Research has shown that emotions are not only part of verbal face-to-face (FtF) interaction, but are also found in other forms of human expression like in computer-mediated communication (CMC) (Brett et al., 2007; Derks et al., 2008; Griessmair & Koeszegi, 2009). Whether a negotiation is conducted in person or using information technologies, it is nevertheless a form of social interaction susceptible to emotions. Although there is a wide variety of communication technologies that were developed as a result of technological breakthroughs in the last couple of decades (e.g. email, IM, video conferencing etc.) (Murphy, Lupton, Hine, & Zelenski, 2007), we are mainly interested in systems designed to support negotiators (online) during a negotiation because of their increased presence and importance in the business world. However, as computer-based interaction is a daily routine for most people nowadays, a general discussion on the differences between face-to-face (negotiation) interaction and computer-mediated communication will be made. This will include the comparison of the ways emotions are communicated in both forms of interaction.

Although a vast number of researchers have emphasized the lack of visual and non-verbal cues in negotiations conducted via computer (Derks et al., 2008; Thompson & Nadler, 2002; Walther, 1995), recent research has concluded that this could be partially offset by the use of non-verbal elements able to convey emotions, so called “paralanguage” (Brett et al., 2007; Griessmair & Koeszegi, 2009; Liu, Ginther, & Zelhart, 2001; Thompson & Nadler, 2002). Moreover, characteristics of information and communication technologies (ICTs), such as asynchronicity, storage and access makes the use of IT in complex

negotiations much easier and therefore makes up for the potential loss of communication channels (Kersten, 2004).

As it will be presented in the following section, offline (FtF) and online negotiations differ in a number of aspects, however the way emotions are communicated in both forms of negotiation interaction is strikingly similar (Derks et al., 2008).

## B.1 Online Text-Based vs. Face-to-Face Negotiations

Online text-based negotiations differ from face-to-face negotiations on a number of contextual and structural factors (Nadler & Shestowsky, 2006; Rangaswamy & Shell, 1997; Walther, 1995). There have been mixed findings as to the differences in their influence on negotiation outcomes, which implies that computer-mediated communication must have some effect on the negotiation process and that these effects have to be investigated and brought to the negotiators' attention. Nevertheless, research outlines that CMC is not worse than FtF communication and that it may even be more effective if used correctly (Kato & Akahori, 2005; Walther, 1995).

The first and most cited difference between online and FtF negotiations is the lack of certain visual and non-verbal cues in online negotiations (Daft & Lengel, 1986; Derks et al., 2008; Moore, Kurtzberg, Thompson, & Morris, 1999; Murphy et al., 2007; Thompson & Nadler, 2002; Walther, 1992, 1995). Non-verbal cues in this context are the facial expressions, gestures, eye-contact and certain paralinguistic, sociological and psychological features that become visible to the environment as a result of interaction and are not transferrable by text. Early research has emphasized that the physical distance of negotiators in online settings, as well as the textual nature of their communication result in more explicit, socially inappropriate and disinhibited behavior than in FtF negotiations (Derks et al., 2008; Kato & Akahori, 2005; Moore et al., 1999; Pesendorfer & Koeszegi, 2006; Thompson & Nadler, 2002). As a result, online negotiations

were believed to be more task-oriented when compared to FtF negotiations which are considered more social-emotion oriented (Liu et al., 2001). In addition, they were considered to be less friendly, emotional and personal and more serious and formal (Foroughi, Perkins, & Jelassi, 1991; Pesendorfer & Koeszegi, 2006; Walther, 1995) and were therefore likely to contain more threats and ultimatums than FtF negotiations (Thompson & Nadler, 2002). The rationale for this states that compared to FtF negotiations, online negotiations lack spontaneity and usually last longer. As a result, negotiators have more time to review their messages, control their emotional expressions and focus on the task at hand rather than on the development of social relationships with their counterparts (Foroughi et al., 1991; Kersten, 2004; Pesendorfer & Koeszegi, 2006; Walther, 1995). Even though this rationale has been contested by a number of studies (see e.g. Liu et al., 2001 and Walther, 1995), it still remains a general view in literature.

There is also indication that information is exchanged more freely in FtF settings compared to online settings, because people in physical proximity of each other interact more frequently, and recognize and address conflicts much faster than people that are physically distant (Morris et al., 2002; Thompson & Nadler, 2002). In fact, (Thompson & Nadler, 2002) found that participants in FtF negotiations exchange more than three times more information than participants in online negotiations. „People talk faster than they write or type“ (Thompson & Nadler, 2002 p.112), which is why online interactions evolve more slowly than FtF interactions and online negotiators require more time to transmit task and social-emotion oriented information (Liu et al., 2001; Walther, 1992, 1995). As Walther (1992) proposed in his Social Information Processing Model, time is a crucial factor for the development of online interpersonal relationships, but as soon as these are established, they may contain the same qualities as FtF relationships. In fact, online interaction may even help to establish relationships that normally would not have formed due to geographic distances, culture or group affiliation (Walther, 1992).

Anonymity is another common characteristic of CMC, whereas in FtF it is difficult to hide one's identity, gender culture etc. In fact, several studies have shown that visual anonymity and isolation typical for online negotiations tends to

encourage more self-disclosure of personal information than in FtF settings (Joinson, 2001; Nadler & Shestowsky, 2006). The propensity to disclose personal information is found to decrease as the anonymity of participants decreases (e.g. use of video camera in negotiations).

Murphy et al. (2007) provide an alternative characterization of the differences between communication in FtF and online negotiations, which includes: synchronicity, symbol variety, rehearsability and reprocessability. While participants in FtF negotiations receive instant feedback from their counterparts, participants of online negotiations have control over when a message will be sent and therefore read by their counterpart, which is a characteristic of *asynchronicity*. *Symbol variety* refers to the amount of available channels and cues of communication (Murphy et al., 2007). Whereas in FtF negotiations people can communicate through auditory and visual channels, which allow for communication of various linguistic and paralinguistic cues, in online negotiations there is only one communication channel available – text messaging. Nevertheless, communication of both linguistic and paralinguistic cues is possible through e.g. punctuation, use of emoticons, word spacing, intentional misspelling and capitalization. Online communication is typically known to be higher in *rehearsability* than FtF communication, independent of whether the communication mode is highly synchronous or asynchronous. Participants in online negotiations have the possibility to reformulate their messages and thus have more control over what they communicate to their counterparts. *Reprocessability* allows participants in negotiations to revisit previously sent and received messages. In FtF negotiations, negotiators have no other way to remember the details of the encounter other than to rely on their own memory, which is commonly affected by recall biases. On the other hand, messages in online negotiations can be saved, revisited and reprocessed at any time (Murphy et al., 2007).

## B.2 Emotions in Online Negotiations

Murphy et al. (2007) argue that the „[...] introduction of technology may not change how we experience emotions, rather, we contend that it is more likely to shape the information with which we base our emotional reactions and judgements“ (p.86). This is due to the fact that the underlying processes that drive emotional behavior is the same online as in FtF interaction and, as people tend to adapt to whatever environment they find themselves in, they interact using the tools made available by the medium of communication in their efforts to convey social-emotional information to others (Murphy et al., 2007; Walther, 1992, 1995). As in every form of human interaction, conflicts are likely to occur in online negotiations as well. Therefore, emotions are bound to arise in this negotiation environment as in any other (Derks et al., 2008; Hine et al., 2009). The following chapters will provide a detailed summary of the major theories and empirical findings in the literature.

### B.2.1 Relational Communication in an Online Setting

*For good or ill, the Internet is a profoundly social medium.* (Walther & Parks, 2002)

Earlier research produced inconsistent findings as to the relational nature of CMC. It was first viewed as an impersonal and unemotional medium (Derks et al., 2008; Walther, 1992, 1995), however recent research holds that online interactions are highly influenced by the social context (e.g. group norms), which influences the interpretation of messages and the shaping of responses (Murphy et al., 2007). Therefore the social context in which online negotiations evolve results in interpersonal relationship development which is largely influenced by the formation of personal impressions about one's communication partner (Liu et al., 2001). Considering the importance of social cues in the formation of personal impressions (see e.g. Liu et al., 2001; Walther, 1992), their transmission in an online setting might bear more value than it would in a FtF setting (Joinson, 2001; Liu et al., 2001; Murphy et al., 2007).

Moore et al. (1999) postulate that in e-mail negotiation encounters, conflict spirals are more likely to occur due to fostered mistrust between the negotiators. However, this effect might be mediated by the existence of previous rapport between the negotiators, such as group affiliation or mutual self-disclosure before the online encounter (Moore et al., 1999). They also argue that while common group affiliation might result in a more rational form of rapport and cooperation, mutual exchange of personal information is likely to be more emotional in nature. On a similar note, it was found that more relationship-focused interaction, which is also known as „schmoozing“ (Moore et al., 1999; Morris & Keltner, 2000; Morris et al., 2002) seems to be missing in online negotiations. Results from experiments by Moore et al. (1999) show that negotiators who make efforts to build rapport provoke more positive emotions and trust in their counterparts. Online negotiations between students from the same university were found to less likely end in an impasse, which provides proof of the advantages of same group membership for the outcome of online negotiations (Moore et al., 1999). Therefore, it may be more difficult to identify the emotions of our online negotiation counterpart, because of anonymity, distance, non disclosure of information or the absence of certain nonverbal cues (Derks et al., 2008; Liu et al., 2001; Murphy et al., 2007; Thompson & Nadler, 2002; Walther, 1995). However, as in every form of interaction, relationship building can also occur in online negotiations because people tend to adapt to the restrictions of the communication channel they are faced with in any way possible (Nadler & Shestowsky, 2006).

If anonymity is a precondition of online interaction, it is interesting to know how this affects the identification and interpretation of messages (Derks et al., 2008). Nonverbal cues that are displayed in FtF interactions have a number of social functions. First of all, they help reduce the ambiguity that sometimes accompanies emotion expression in online communication, and they strengthen or alleviate a certain emotion that is being expressed (Lee & Wagner, 2002). Therefore, due to the the lack of certain cues in CMC some emotional expressions are likely to be over- or underestimated, which in the case of negative emotions might lead to conflict spirals (Derks et al., 2008). Nevertheless, recent research has shown that this missing information might be

compensated for by a more explicit and direct way of expressing emotional states than in traditional FtF encounters (Derks et al., 2008; Nadler & Shestowsky, 2006) or by using emoticons that to some extent portray facial expressions (Griessmair & Koeszegi, 2009; Lupton et al., 2002; Murphy et al., 2007; Nadler & Shestowsky, 2006). Such „emotional icons“ may likely have similar functions as nonverbal cues in FtF interaction, as they also help to intensify an emotional expression (Derks, Bos, & Von Grumbkow, 2007; Walther & D'Addario, 2001) and communicate social-emotional information (Griessmair & Koeszegi, 2009). Along with the identification of other social cues present in CMC (e.g. chronemics), recent studies have shown that negotiators can use these not only to communicate emotions, but also to inform about one's intentions, values and psychological states (Brett et al., 2007). Moreover, it is hypothesized that negotiators' judgements may form more quickly as a result of information conveyed by emoticons than from information conveyed using purely linguistic cues (Murphy et al., 2007).

According to the way in which they view the difference in relations caused by media characteristics, all theoretical models that deal with affect and CMC can be categorized into two opposing perspectives: the Cues-Filtered-Out, and the Cues- Filtered-In perspective.

#### B.2.1.1 The Cues-Filtered-Out Perspective

According to this perspective also referred to as the *pessimistic view*, which was dominant in the 1980s, the CMC environment acts as a restraint to the transmission of nonverbal cues. Therefore, CMC is seen as a more task-oriented medium that fosters anti-normative, depersonalized and disinhibited social behavior that prevents relationship building between users (Derks et al., 2008; Griessmair & Koeszegi, 2009; Liu et al., 2001; Pesendorfer & Koeszegi, 2006; Walther, 1992, 1995).

Most of the earlier research on interpersonal interaction in CMC sided with the cues-filtered-out perspective (Liu et al., 2001; Walther, 1995). Within this perspective, three major theories were developed: the Social Presence Theory, the Lack of Social Cues Hypothesis and the Media Richness Theory.

At the basis of the Social Presence Theory (Short, Williams, & Christie, 1976) is the argument that the presence of fewer communication channels and cues in CMC causes less attention being paid to the social presence of others. Social presence in this sense is defined as a feeling of the other person's involvement in the interaction (Walther, 1995). Since CMC is considered to be devoid of certain nonverbal cues, it is hypothesized that the feeling of social presence will be reduced in this medium of communication compared to FtF communication. The decrease of perceived social presence is said to cause more impersonal communication between participants (Lupton et al., 2002; Walther, 1995).

Sproull & Kiesler's (1986) Lack of Social Cues Hypothesis posits that the absence of social information represented by aspects of the physical environment and nonverbal cues in CMC causes more uninhibited and antinormative behavior. Other expected effects include swearing, hostile language, insults and self-absorption.

The Media Richness Theory (Daft & Lengel, 1986) is concerned with the bandwidth (i.e. the number of available cues) of communication and information exchange within different media (Murphy et al., 2007). Consequently, face-to-face communication is considered to be the richest media as it allows for immediate feedback and the communication of the largest number of verbal and nonverbal cues. The theory proposed that managers should use the richer media to communicate highly ambiguous information and other less rich media, such as CMC, for more explicit communications. However, later studies have shown that media characteristics cannot always predict the choice or the success of the communication channel (Griessmair & Koeszegi, 2009; Murphy et al., 2007; Walther, 1995).

#### B.2.1.2 The Cues-Filtered-In Perspective

This so called *optimistic view* was developed as a result of criticism on behalf of the cues-filtered-out perspective. Namely, it was found that media-characteristics are not the only factors that influence the patterns of interaction and its success, but there are other task-related characteristics that should be considered as well (Murphy et al., 2007).

According to the Social Information Processing (SIP) theory proposed by Walther (1992), the crucial factor that influences the communication of relational cues in CMC is time, not capability (Griessmair & Koeszegi, 2009; Liu et al., 2001). The limited bandwidth of CMC allows for less information to be exchanged for the same amount of time as does FtF interaction and slows down the processes of impression formation and relationship development (Walther, 1992, 1995). Walther argues that, given enough time, CMC will be as suitable for relational communication as FtF communication (Griessmair & Koeszegi, 2009). The core assumption of the SIP theory is that social-emotional information can be conveyed in CMC interaction not only via the participants' adaptation to the constraints of the medium, but through a longer exchange of information that eventually results in interpersonal relationship development. In fact, according to a later study by Walther (1995) CMC was found to be no less intimate or social-emotion-oriented than FtF communication. Furthermore, there is indication that CMC is more formal and aggressive in the beginning of a relationship, but it becomes less formal and task-oriented as participants exchange a greater number of messages, finally reaching levels of relational communication similar to FtF communication (Liu et al., 2001; Walther, 1995). Walther (2002) argues that earlier studies pertaining to the cues-filtered-out view did not provide participants of CMC experiments with enough time to exchange messages, which is why they revealed disadvantages compared to FtF communication.

Hence, negotiations that are administered via CMC contain both task-oriented and social-emotion oriented communication and allow for the transmission of emotional cues (Liu et al., 2001). The cues-filtered-in perspective postulates

that social-emotional information in CMC is exchanged through "[…] content, style, and timing of verbal messages online" (Walther & Parks, 2002 p.535). Specifically, several recent studies have shown that CMC users communicate both verbal as well as certain nonverbal cues (Derks et al., 2008; Liu et al., 2001; Murphy et al., 2007; Walther, 1992). These cues can convey distinct emotions and they include the use of emoticons, the capitalization or repetition of letters, punctuation, frequency and duration of interaction and chronemics (timing of message exchange) (Brett et al., 2007; Griessmair & Koeszegi, 2009; Liu et al., 2001). For example, an emotional message sent by night signals more intimacy than an emotional message sent by day, and a task-oriented message sent by night conveys less intimacy than when it is sent by day (Liu et al., 2001). As pointed out by Liu et al. (2001), these elements of CMC constitute a certain paralanguage which is able not only to convey social-emotional information, but it also helps to identify the communication style of a certain person, which may in turn help to draw conclusions about his/her personality traits, values and intentions (Brett et al., 2007).

The expression of social cues in CMC is not as direct, so their detection might take longer in online settings than it would in FtF communication (Nadler & Shestowsky, 2006). However, recent empirical studies provide evidence for the cues-filtered-in perspective and support the notion of the social-emotional orientation of CMC (Griessmair & Koeszegi, 2009; Liu et al., 2001; Lupton et al., 2002; Murphy et al., 2007).

## B.3 Negotiation Support Systems (NSSs) and e-Negotiation Systems (eNSs)

*The potential of ICT is much more than just communication.* (Kersten, 2004 p.6)

Our focus in this study is on the communication of emotions in online negotiations that are supported by electronic negotiation support systems (eNSs). However, most of the research in this field has neglected the role of emotions that inevitably arise during the process of online negotiations, as their

main focus seems to lie on the comparison of various communication media or communication modes and the outcomes of online negotiations (Pesendorfer & Koeszegi, 2005).

The development of eNS software was put forth after years of research on CMC due to the growing need to negotiate and the increasing complexity of issues to be negotiated about online (Foroughi et al., 1991). Furthermore, these support systems were developed thanks to the valuable insights from decision making, game theory and negotiation analysis (Braun et al., 2005). When the issues or some other aspects of an online negotiation are too demanding, there is a need for objective support that helps decision makers (negotiators) reduce their cognitive load by quantitatively analyzing each message and suggesting solutions to the problems (Schoop, 2010). Schoop (2010) also points out that negotiations often involve the transfer of documents such as contracts that need to be formally documented and archived. Document management is yet another feature of software designed to support online negotiations.

While a decision support system (DSS) is oriented towards helping the individual understand his/her preferences and search for solutions, a negotiation support system (NSS) is highly process-oriented, as it helps the negotiators understand each other's preferences and priorities, provides constructive advice for conflict resolution and suggests possibilities of mutually satisfactory agreements between them (Kersten, 2004; Kersten & Lai, 2007; Weber, Kersten, & Hine, 2006). As Kersten (2004) points out, both of these systems are comprised in a broader term called an e-negotiation system (eNS), which is „[…] software that employs Internet technologies, is deployed on the web, and has one or more of the following capabilities:

1. Supports decision- and concession-making;

2. Suggests offers and agreements;

3. Assesses and criticizes offers and counteroffers;

4. Structures and organizes the process;

5. Provides information and expertise;

6. Facilitates and organizes communication;

7. Aids agreement preparation; and

8. Provides access to negotiation knowledge; experts, mediators or facilitators“ (p.4).

Therefore, some less complex media channels such as email and IM can be defined as eNSs too (Moore et al., 1999), but they are characteristic for computer-facilitated negotiations as they only allow for communication, storage and access to information (Kersten & Lai, 2007). However, these do not include advanced support tools typical for computer-supported negotiations that expand the abilities of negotiation participants to understand the problem and find suitable solutions for it by providing them with information that they would otherwise not be able to possess (Kersten, 2004; Kersten & Lai, 2007).

### B.3.1 Emotions and NSS: How to Elicit Emotions from Text?

Studies of online negotiations showed that negotiators' decisions, judgments and strategies are influenced by cognition, as well as by emotion and that the messages exchanged during such negotiations thus transmit both cognitive and emotional information (Hine et al., 2009; Sokolova & Lapalme, 2010). Since online negotiations are mostly text-based, and therefore characterized by a lack of certain nonverbal cues, negotiators must rely on words to extract meaning from messages they receive from their counterparts (Brett et al., 2007; Hine et al., 2009; Schroth et al., 2005; Sokolova & Lapalme, 2010). Text, and thus written language is an important tool in electronic negotiations (Sokolova & Lapalme, 2010). Therefore, negotiators have to pay special attention to the wording of messages they receive and send, because it may well be the only source of additional information in the online negotiation over which the negotiator may have some control.

Sokolova & Lapalme (2010) studied the *informativeness* of negotiation messages (i.e. the amount of information conveyed by a message) and its link to negotiation outcomes. They argue that information given via a message is made up of said information, linguistic meanings and the context of the message and that pragmatic cues (e.g. adjectives, adverbs, conjunctions, cognition verbs, cardinal numbers etc.) are able to make up for the absence of visual cues in text-based online negotiations. Similarly, Griessmair & Koeszegi (2009) argue that messages exchanged in such a negotiation environment rarely convey only one clear meaning, but they should be further analyzed to uncover the other communicative layers that also implicitly convey emotions. In this way, messages with the same factual information may convey contrasting emotional information when negotiators choose to use different lexical and syntactical constructions (Griessmair & Koeszegi, 2009). Therefore, these studies further support the notion of the social-emotional orientation of electronic negotiations.

Moreover, the empirical results in Sokolova & Lapalme (2010) indicate that negotiation outcomes can be predicted early in the negotiation by paying attention to the informativeness signals in the exchanged messages. For instance, they found that the most informative signal in the first half of the negotiation is the word „your“, and that when it is accompanied by „it“ and „can“ in the first half of the message exchange, there is a high probability of success. On a similar note, Brett et al. (2007) found that words expressing the giving or attacking face in online negotiations influence the likelihood of settlement; and Hine et al.'s (2009) study shows that there is significantly more agreeable and less negative language in successful e-negotiations compared to failed e-negotiations.

Thus, the language used in text-based negotiations provides not only factual information about the sender, but also contains layers of emotional content which are a source of additional information regarding the sender, his preferences and states and the situation in general. In conclusion, the possibility to convey emotions in text-based online messages is not impossible, as previously believed. In fact, the elicitation of emotions in online settings is possible due to the emotional layers implicitly conveyed by text.

# C) Empirical Analysis

## C.1) Motivation and Research Questions

In the present study we are interested in the influences of decision support systems (DSS) and negotiation support systems (NSS) on the negotiation process. Specifically, we direct special attention to the emotional dynamics that arise in negotiations and to the ways in which they shape the negotiation process mediated by a Negotiator Assistant. Consequently, we have organized our work in three research questions.

*RQ 1: What is the impact of DSS on emotional behavior of negotiators?*

Although a vast number of studies addressed the topic of the effects of decision support in the last decade, we have identified a gap in the literature as far as the study of the relationship between decision support and emotional behavior is considered. So far it has, for instance, been shown that decision support improves decision making efficiency and effectiveness (Singh & Ginzberg, 1996), information processing (Delaney, Foroughi, & Perkins, 1997) and fairness by promoting integrative behavior (Perkins, Hershauer, Foroughi, & Delaney, 1996). Duncan & Barrett (2007) argue that any kind of cognitive input, like the additional „rational“ information provided by DSS, has the tendency to impact emotional behavior. We therefore inspect whether the existence of additional information and assistance provided by the decision support (DSS) influences the negotiators' emotions and overall negotiation behavior and outcomes.

*RQ 2: What kinds of emotional patterns arise in negotiations that eventually end in agreement and those that end in an impasse?*

We acknowledge that emotions are dynamic by nature and that they tend to evolve from moment to moment (Scherer, 1986; Daniel Shapiro, 2002). The literature mostly addresses emotions as static predictors or consequences,

neglecting their dynamic nature. Kumar (1997) and Morris & Keltner (2000) both propose several emotional stages though which the negotiation evolves over time. By understanding the complex dynamics of emotional interplay, we believe negotiators can begin to understand how they can affect the negotiation process with their own behavior and communication styles. Griessmair & Koeszegi (2009) provide proof that successful and failed negotiations evolve differently and involve a broad range of emotions. However, a dynamic perspective of emotions in combination with the effects of negotiation support has not yet been investigated. Within this research question, we primarily aim to identify the specific emotional dynamics that are characteristic for failed and successful negotiations with and without DSS.

*RQ 3: Does the timing of use of the Negotiator Assistant influence the emotional behavior of negotiators?*

Negotiation Support Systems (NSSs) have been shown to improve joint gains and perception of negotiation climate, increase fairness, satisfaction and lead to more balanced contracts (Delaney et al., 1997; Foroughi, 2011; Foroughi et al., 1991; Perkins et al., 1996; Rangaswamy & Shell, 1997). However, there is an identifiable gap in the literature, represented by the lack of empirical studies investigating the direct effects of the use of a Negotiator Assistant on the emotional behavior of negotiators. We investigate whether the use of a Negotiation Support System, specifically a Negotiator Assistant (NA) in a specific phase influences the emotional behavior of negotiators. To the best of our knowledge, the paper by Kersten (2004) is the only one that mentions the link between NSS and negotiator behavior. He assumes that NSS positively influences the relationship between negotiators, that is „[...] exemplified with their positive emotions“ (p.15). However, so far no empirical findings exist, which is why we are motivated to inspect this relationship empirically and in detail.

## C.2) Data Collection & Participants

Data used for the purposes of this study is obtained from 57 dyadic online-negotiations executed with help of the Negoisst Negotiation Support System, and performed by 114 students from the University of Tilburg (The Netherlands) and the University of Vienna (Austria) enrolled in International Negotiation courses. For the purpose of this empirical analysis, relevant data from a simulated negotiation experiment called Mihalits AG – Metallurg Technologies Joint Venture was used.

### C.2.1) Negoisst System & VienNa 2.0

Negoisst is a complex Web-based electronic negotiation support system which allows for multi-attributive, bilateral negotiations. The system integrates Semantic Web technologies and allows for pragmatic enrichment of the sender's intentions. Therefore, it is always clear whether a message is a formal offer or an informal question. Although it integrates analytic functions as well, the system mainly focuses on the support of the communication processes. The system is offered in two versions, with and without decision support. It is therefore used in trainings and negotiation simulations and experiments as a negotiation support system (NSS) and, if possible, as a decision support system (DSS). We will go further into the definition of these specific terms later on.

The underlying integrated components of Negoisst are documentation support, communication support and, if provided, decision support. While the documentation support tool offers the automatic storage and archiving of negotiation messages, generation of contract versions and the linking of contract versions to the negotiation messages, the communication support tool uses a strictly alternating protocol (Figure 1) where negotiator A can only send a message to negotiator B when it is his turn and notification to both is done via e-mail. Communication support also allows for semantic (definitions and relations) and pragmatic (intentions) enrichment of messages. Therefore, it is possible to

have a distinct representation of the negotiation issues which are clearly defined in the system and are shown in the negotiation agenda. Also, message types are defined a-priori, so that the receiver knows whether he is receiving an offer/ counteroffer/question etc. or whether he is requested to give clarification on an issue.

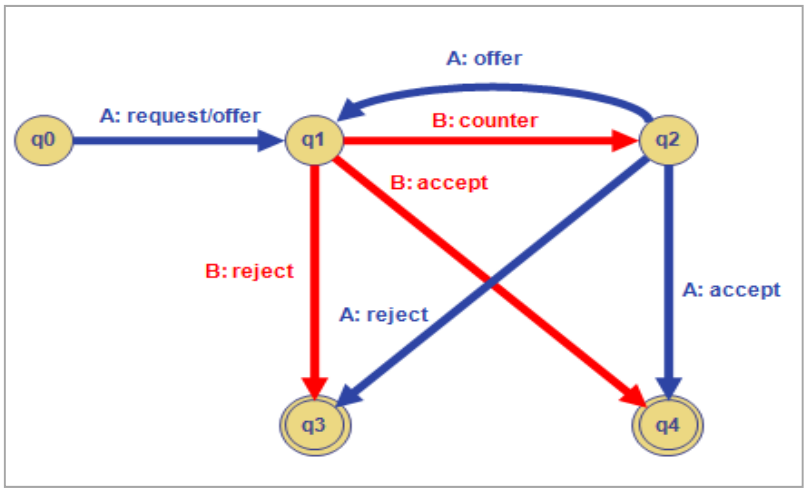


**Figure 1: Alternating Negotiation Protocol**

*Adapted from: PPT Presentation „Negotiation Simulation – Introduction to Negoisst and VienNa 2.0" by the Chair for Business Informatics (University of Hohenheim) and the Department for Labor Science and Organization (Vienna University of Technology)*

The decision support tool offers assistance with reflecting one's preferences and with the verification of the achievements and progress of the negotiation in an objective manner. The use of decision support does not influence the negotiation directly, since it is not visible to the negotiation partner. A typical use of decision support is, for instance, the calculation of individual utility functions at a given point in the negotiation based on the preferences and weightings one has given to the negotiation issues. This function calculates the individual utility value for every offer received or sent and, in this way, helps the negotiator to have an idea of his/her own progress in the negotiation.

Each negotiation is comprised of two randomly assigned parties (in this case - students) engaging in negotiations with each other. Once the parties log-in using the log-in data provided by the administrators/teachers, they are required to edit their preference model, i.e. decide upon the relative importance of the

attributes/issues to negotiate. This can vary between 0% and 100%. Participants in negotiation simulations are usually given best case (Aspiration Level) and worst case (Reservation Level) values and ratings of attribute importance a-priori. The relative importance of attributes must add up to 100% in total. At this point, the negotiation can begin and it may be initiated by either party. Every party has the possibility to send personal messages and/or personalized negotiation agendas with desired attribute values to her counterpart. Offers can be either partial or fully defined.

As in most cases of human communication, conflicts between the involved parties in online negotiations are also inevitable. For the purpose of resolution or mitigation of these conflicts the negotiators can use a Negotiator Assistant (NA), in this case called Vienna Negotiator Assistant - VienNA 2.0. VienNa is an e-mediation system which acts as a neutral expert and helps with: reflecting on the negotiation process, identifying the most conflicting aspects, identifying one's level of flexibility, enhancing understanding of the conflict situation and making projections of the possible outcomes of negotiations. The system therefore provides functions that are usually performed by a mediator i.e. (i) the appraisal of the progress of the negotiation towards or away from an agreement by posing the negotiating parties a set of questions to retrieve necessary information as well as graphical representation of their flexibility, (ii) analysis of the causes of potential impasse situations and (iii) gives advice in form of recommendations to overcome impasses based on the previously derived diagnosis and analysis.

A party can ask for assistance from VienNa and thereby initiate a mediation round at any point during the negotiation, as well as at the end of the negotiation. VienNa then proceeds by giving the parties two questionnaires to fill in, in order to acquire as much information about the problem at hand as possible. One questionnaire concerns the most conflicting issue and the other is about the negotiation process. Once both parties have filled in their questionnaires, they can see the combined results for that VienNa round, including the Flexibility Grid, interpretation of one's position in the grid and important questions, one's answers and the derived advice on the basis of

those answers. After having completed one mediation round, one can create a new round with a new issue or create a new round with a pre-existing issue. After an offer is accepted or rejected, there is no way back and VienNa is activated automatically for the last time.

### C.2.2) Case Description: Mihalits AG – Metallurg Technologies Joint Venture

The data used for the purposes of this study is derived from a simulated negotiation case known as the Mihalits – Metallurg negotiation case. The simulation involves two fictional companies: Mihalits AG, an Austrian aircraft manufacturer and Metallurg Technologies, Ukrainian producer of military aircrafts. The negotiating parties acted as representatives of either one of these two companies and their assignment was to negotiate a deal with their partners following instructions given by their board of directors as far as specific issues were concerned. The pre-defined agenda issues were: share of future revenue, number of directors in board, secrecy clause, duration of contract, payment of “common workers”, additional compensation Ukrainian workers and court of jurisdiction. Negotiators are informed that there are other potential JV partners and other business opportunities, although less profitable, for their respective companies, which implies that the negotiation does not necessarily have to end in agreement.

## C.3) Data Analysis

The upcoming chapter is structured as follows. In chapter C.3.1, we will describe the procedure for emotion elicitation from text-based messages, which is based on a rating process via which negotiation messages are sorted into piles according to emotional similarity. The obtained similarity ratings are subsequently analyzed with a Multidimensional Scaling (MDS) algorithm, which will be further elaborated in chapters C.3.2 and C.3.3.

### C.3.1) Procedure

As previously mentioned, the data used in the empirical part of this thesis was derived from a text-based negotiation simulation carried out with help of student-dyads who acted as representatives of one of the two companies (Mihalits or Metallurg) pursuing the best possible conditions for a joint venture.

For the present research we used 57 negotiations, which means that 114 negotiators in total were negotiating. The average age, average English knowledge and negotiation experience, as well as the distribution of male and female negotiators were in line with the needs of the experiment, so that a smooth line of action was guaranteed (Table 1).

| 57 negotiations = 57 dyads = 114 negotiators | | |
|---|---|---|
| 32 negotiations with DSS<br>25 negotiations without DSS | | |
| **Gender** | **48%** women | **52%** men |
| **Age** | average = **24,05** | |
| **English knowledge (average)** | **3,9** on a scale of 1 - 5 | |
| **Negotiation experience (average)** | **2,58** on a scale of 1 - 5 | |

**Table 1: Descriptive Statistics of Negotiator Characteristics**

The 71 students' (from now on referred to as *raters*) role was to provide us with objective ratings of emotional similarity of all the negotiation messages. They were divided into 3 groups for the simple reason that it reduces the workload for

them. Also, since we expect similar results for each of the individual groups, it allows for cross-validation of the results.

| **Group 1** 28 raters | | **Group 2** 21 rater | | **Group 3** 22 raters | |
|---|---|---|---|---|---|
| 19 negotiations (250 messages) | | 19 negotiations (245 messages) | | 19 negotiations (235 messages) | |
| Agreement | No Agreement | Agreement | No Agreement | Agreement | No Agreement |
| 13 negotiations | 6 negotiations | 13 negotiations | 6 negotiations | 12 negotiations | 7 negotiations |
| 192 messages | 58 messages | 172 messages | 73 messages | 154 messages | 81 message |

**Table 2: Group Overview**

In order to obtain the data required for our MDS analysis, we randomly assigned the negotiations to our 3 groups of student-raters (every group was given the same number of negotiations to rate - 19) and we asked the students to rate and describe in a few words or phrases every message of the negotiations they were assigned.

Packages containing randomized messages (each on a single piece of paper) and an instruction sheet were handed out to the raters. They were asked to begin with analyzing the content of one message and start building a first pile of messages representing a specific emotion. Further on, they were asked to pick another random message and either assign it to the already existing pile, or form a new pile, depending on the emotional content of the message. The possible number of piles was not limited. The raters were required to proceed in the same manner until all the messages had been assigned to the appropriate emotional piles. Finally, we asked the raters to shortly describe the emotional content of each pile, as well as to rate its emotional strength on a Likert-type scale from 1 to 7 (1 meaning very positive emotions, 4 being emotionally neutral, and 7 representing very negative emotions). Instructions were to underline, and therefore distinguish the words or phrases that they considered crucial for their judgment call.

Ideally, after this procedure, every rater would have divided the messages in piles according to their emotional similarity.

### C.3.2) Multidimensional Scaling (MDS)

For the present analysis we applied Multidimensional Scaling (MDS). MDS has been employed in negotiation research, as well as in the analysis of emotions in the past (see e.g. Barrett & Fossum, 2001; Kring, Barrett, & Gard, 2003; Russell, 1980; Russell & Bullock, 1986). This technique is particularly useful in emotion analysis because emotional dimensions are not subject to hierarchical taxonomy. Because of its inductive, as opposed to deductive, nature, MDS does not limit our analysis to previously defined dimensions, but it enables us to apply a more open approach. Basically, it is a data-reduction technique that gives us information on *how* and *why* variables are related by uncovering the spatial representation that defines behavioral data (Pinkley et al., 2005).

Thus, MDS allows us to uncover the "hidden structure" of data in forms of multiple dimensions that distinguish one type of stimuli from another (Pinkley et al., 2005). This proves to be particularly meaningful in our case, because one message can be explained by more than one emotion. This characteristic of emotions is also called *data fuzziness,* and can be accounted for by using MDS. However, we will discuss it later on.

### C.3.3) Method

For the purposes of this study, we applied multidimensional scaling in a qualitative-quantitative research design. The first step, as required by the MDS technique, was the determination of the number of dimensions, as well as their

interpretation. To do this, first of all, we had to construct a similarity matrix for all 3 groups of negotiations, described in detail in chapter C.3.1. This can be interpreted as a matrix, constructed to show how often two messages were assigned to the same pile. The more emotionally similar the two compared messages are, the higher is their similarity score, indicated by a percentage. Thus, the minimum similarity is 0 and the maximum is 1. When the similarity score is 0, this implies that the messages were never assigned to the same pile. On the other hand, maximum similarity (1) implies that the messages were always put in the same pile. The information retrieved from this step is then further analyzed by a MDS algorithm, which then suggests how many dimensions best explain the similarity data. MDS consequently provides a geometric representation of the relationship between the messages by placing them in a spatial map. If two messages have more similar emotional content, this similarity is represented by their proximity in the map.

The principal problem here is how to choose the "proper" dimensionality. Scaling with too few dimensions (*m*) may lead to distortion of the true structure or may even lead to technical problems. Choosing to work with too many dimensions might, on the other hand, damage the MDS structure (Borg & Groenen, 2005). For the purpose of determining the number of dimensions, it is often suggested to look at the stress value decrease (Kruskal, 1964), and some researchers in the field suggest to look for the "statistical elbow" (T. F. Cox & Cox, 2001) that could help identify the optimal number of dimensionalities.

Stress is, in a way, similar to the correlation coefficient, except that it measures the badness-of-fit rather than the goodness-of-fit (Borg & Groenen, 2005). As mentioned, one theory suggests that one should pick that number of dimensions "for which further increase in *m* does not significantly reduce stress" (Kruskal, 1964 p. 16). To find that optimal *m,* one should first of all compute MDS solutions for different numbers of dimensionalities (e.g., for m = 1, 2, . . . , 4) and then plot the resulting Stress values (on the Y -axis) against the *m*-values (on the X-axis). This gives us a Scree Plot, which is generally represented by a curve that is monotonically decreasing, but at an increasingly slower rate (giving a slightly convex curve). What one looks for in this graphical representation, is the so called "statistical elbow", a point in the curve where the

decrease in stress begins to be less pronounced (Borg & Groenen, 2005). The elbow point is thought to correspond to the dimensionality *m* that explains the data best.

According to our Scree Plot (Figure 2), the "elbow" occurs at 2 dimensions, since stress decrease becomes less significant for larger values of *m.*

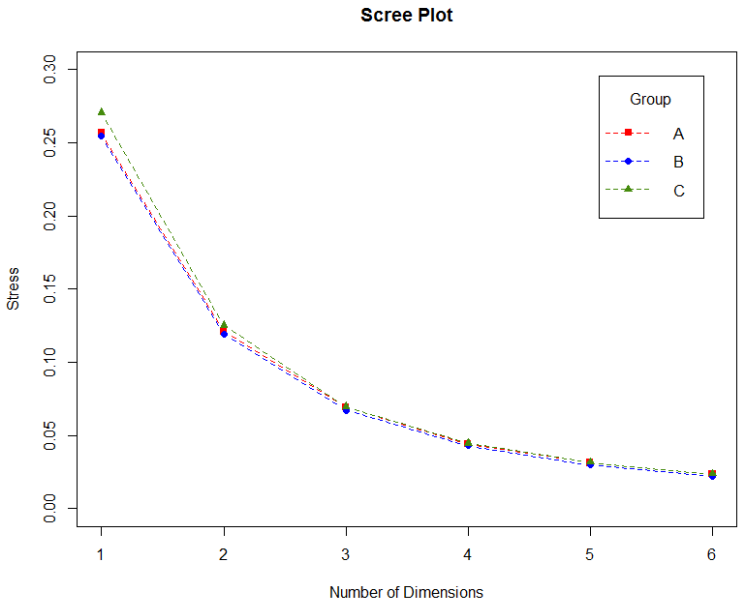


**Figure 2: Scree Plot**

However, these purely mechanical criteria are not considered sufficient for evaluating Stress; a second important criterion is the interpretability of the coordinates (Kruskal, 1964). To be more precise, if the *m*-dimensional solution delivers a satisfying interpretation, but the (*m*+1)-dimensional one unveils no relevant structure, it makes no sense to use the additional dimension. In our case, upon investigating the possibility of a 3-dimensional solution, we have found that an additional dimension did not reveal any further structure and therefore there was no plausible explanation for the third dimension.

## C.4) Interpretation of the Dimensions & Multidimensional Space

After choosing the dimensionality, every dimension has to be interpreted and labeled. By using multidimensional scaling, each data item is represented as a data dot in a spatial map produced by the MDS analysis. The representation of qualitative data material in the multidimensional space makes it possible to notice patterns in the attributes of stimuli clustered around the ends of a dimensions continuum and other patterns that may stand out (Pinkley et al., 2005). By comparing these clusters of data items at one endpoint of a dimensional axis to the data clusters at the other endpoint, it is possible to make inferences on their meaning. Because data items can be related to specific dimensions to a different extent, we are able to identify inter-dimensional relationships more easily. This characteristic of MDS is called *data fuzziness* and MDS allows us to capture the multidimensional nature of "fuzzy" items (Varki, Cooil, Rust, & Smith, 2000). Items with high loadings (be it positive or negative) on a specific dimension but with low loadings on the other, can be regarded as representative of that particular dimension (Pinkley et al., 2005). Items found close to the intersection of the axes are not considered strongly characteristic for any dimension, but should still be in compliance with their interpretations (Griessmair, Strunk, & Auer-Srnka, 2011).

To get a more reliable definition and interpretation of our two main dimensions, we used the information provided by the raters in addition to the results of the qualitative analysis. Our raters were asked not only to sort the messages according to emotional similarity and rate them on a seven-point scale reflecting their emotional valence and strength, but they were also required to provide a short description of every emotional pile. This valuable information helped in the process of interpreting the dimensions. Furthermore, we looked at the content of some of the messages situated at the endpoints of the axes and, in combination with the information from the raters, we were able to identify labels for our two dimensions (Table 3).

| Dimensional Labels |
| --- |
| D1: pleasure vs. displeasure |
| D2: idle vs. alert/surprised |

Table 3: Common Dimensional Labels

In addition to the two main axes representing the two dimensions, we further investigated the messages situated in the inter-dimensional spaces (quadrants) and, after carefully inspecting their content and the results they yielded in the qualitative analysis, we labeled them as well. Consequently, we now have two additional inter-dimensions: angry/aroused vs. relaxed/calm, and cheerful vs. unhappy (Figure 3).

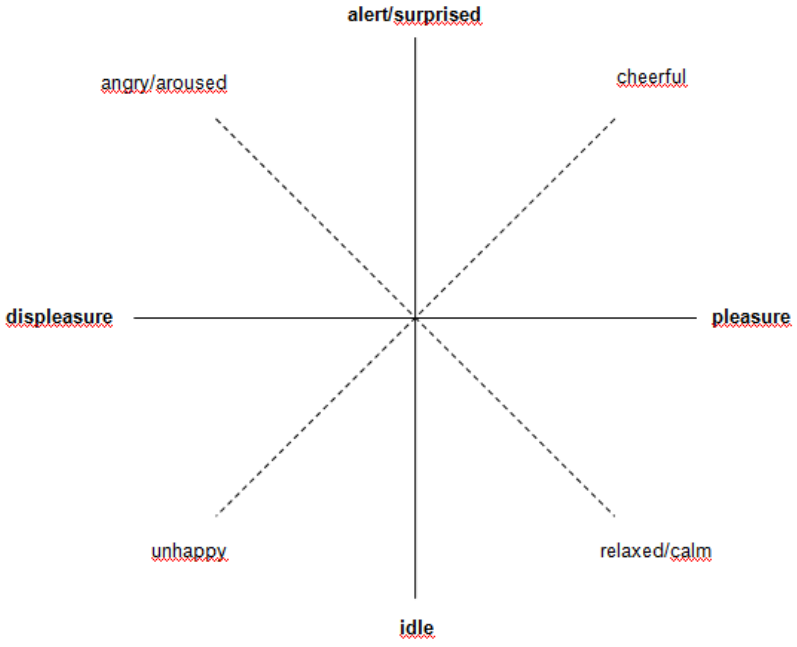


Figure 3: Multidimensional Space

As suggested by Seo, Barrett & Jin (2008), these affective states can be interpreted as combinations of the primary two emotional dimensions. We will go into the interpretation of the multidimensional space in more detail in the next few paragraphs.

### C.4.1) The Circumplex Model of Affect in Online Negotiations

One way of configuring and interpreting emotional dimensions is provided by the Valence/Arousal Circumplex Model of Affect. To the best of our knowledge, there has been only one study thus far that provides an interpretation of emotions in electronic commerce via the circumplex model. In this study, the authors propose a model "[…] able to capture and interpret the customer's emotional knowledge" (N. Jascanu, Jascanu, & Bumbaru, 2008 p.1) by incorporating emotions in a variety of aspects of e-commerce, from customer knowledge acquisition to bilateral negotiation and marketing research (N. Jascanu et al., 2008). In our study, we attempt to further develop this line of research by applying the circumplex framework into online negotiations with negotiation support. We suspect that the additional information provided by decision (negotiation) support will have influence on arousal in online negotiations because more precise information on issues important to negotiators could make them more alert in their actions and reactions.

As shown by the dimensional analyses of similarity ratings in a number of studies, valence and arousal are the primary dimensions of the circumplex (Russell & Barrett, 1999). *Valence* indicates the pleasantness of the emotional experience, and *arousal* represents the activation linked to specific emotional experiences (Barrett & Fossum, 2001; Seo, Barrett, & Jin, 2008). The Model is represented by a spatial map in which affective concepts are placed into a circle in the following order: "pleasure (0°), excitement (45°), arousal (90°), distress (135°), displeasure (180°), depression (225°), sleepiness (270°), and relaxation (315°)" (Russell, 1980, p. 6). According to Russell (1980), affective states are best represented as a circular model in a "two-dimensional bipolar space" (p.1168), where the horizontal axis represents pleasure-displeasure and the vertical one indicates arousal-sleep. While the remaining four variables do not represent independent dimensions, they help define the quadrants of the multidimensional space. The notion suggests that affective states do not exist

independently of one another, but are correlated in a systematically, as we could observe in our case. Studies have shown that many emotional categories do not cluster around the valence or arousal axes, but they fall throughout the perimeter of the space defined by the two axes, thus suggesting that any affect term could be interpreted as a combination of the pleasure and arousal concepts (Russell, 1980; Russell & Pratt, 1980). *Excitement*, for instance, should not be interpreted as being only pleasant or arousing, but must be perceived as a combination of pleasure and arousal. Our spatial map, where we can observe the multitude of negotiation messages evenly distributed in space rather than clustered around the primary two axes, provides evidence for this notion.

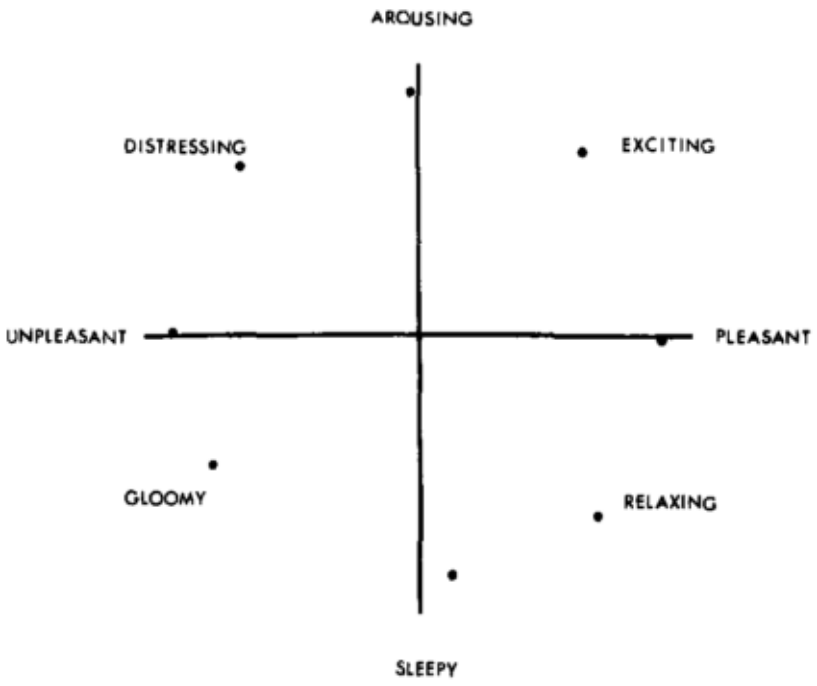


**Figure 4: The Circumplex Model of Affect: Eight affective concepts in a circular order**

*Adapted from: Russell (1980)*

It goes without saying that our multidimensional space represented in Figure 3 shows a strong circumplex structure similar to the original circular ordering of the eight affective concepts as proposed by Russell (1980) (see Figure 4). This spatial cognitive map, with pleasure/displeasure and arousal dimensions as

anchors, is essentially always recovered in MDS analyses of similarity ratings of affective stimuli (Seo et al., 2008). The structure of the original model, proposed by Russell (1980) and represented in Figure 4, is derived from similarity ratings of affect words and valence and arousal represent the basic aspects of semantic knowledge about affect (Kring et al., 2003; Russell, 1980; Seo et al., 2008). We, however, incorporate the circumplex model in findings from online negotiations using similarity ratings of negotiation messages containing emotions. This is an interesting topic of discussion, since online negotiations are expected to provoke high levels of arousal (Griessmair & Koeszegi, 2009). On the other hand, one could argue that the mere existence of decision support tools and negotiator assistants might moderate these effects and act as a restraint to high levels of arousal. While we acknowledge the fact that our negotiators were in fact students, and thus their motivation and dedication to prevail in the negotiation game may be considered debatable, we argue that the great majority of researchers on similar topics also use students for research-related experiments. As a result, we do not expect our results to be less valid or reliable, since it clearly does not deviate from the status quo of research. Moreover, the multidimensional representation of our findings clearly supports and strikes a strong resemblance to the Circumplex Model of Affect.

### C.4.2) Dimension n.1: pleasure vs. displeasure

The dimension reflecting pleasure vs. displeasure is often referred to as *valence* in literature on dimensional representations of emotions, especially in literature on Circumplex Models of Affect. Studies on the semantics of emotional expressions, vocal and facial expressions of emotions recognize the importance of the valence dimension of affect and support its bipolarity (Kring et al., 2003; Russell, 1980; Russell & Barrett, 1999; Russell & Bullock, 1986).

Emotions situated at the displeasure extreme of the dimension are for instance frustration, depression or sadness (Russell, 1980), as documented by the

content of messages with low loadings on the first dimension (≤-0,5). The Mean Strength values, which are the average emotional ratings (on a 1-7 scale) that the raters assigned to the messages in question, support our findings thus far.

| Message ID | Factor Loading | Message Text | Mean Strength |
|---|---|---|---|
| 14.0.a.09 | -0,79 | Good evening Mr. Husar, As said in my last reply, I have done all concessions I could make due to the limitations of my company. I hope you respect this. The only attribute I am allowed to give in on is the future revenue. Although my opinion is that my company deserves more than 50% I would not want to break down the negotiations on this. For giving in on the revenue I insist on Metallurg paying for the JV workers. Otherwise this project is financially not interesting for us. The majority in the board is a hard constraint which cannot be discussed as mentioned in my last reply. I have done all I could do to meet the interests of your company. I am convinced we have a fair deal for both parties. Kind regards and a good weekend. Mr. Koller. | 4,23 |
| 29.0.a.20 | -0,90 | As time is running, and of course I've shared my thoughts many times before I won't make any other suggestion. I count on an offer which we will accept on Sunday. Sunday is also the next time when I'm available online. Therefore I think that we only could exchange one last offer. | 5,09 |

**Table 4: Examples for displeasure**

The opposing extreme of this dimension represents pleasure and such emotions as happiness and delight (Russell, 1980). Consequently, messages found at and around this extreme tend to exhibit high loadings on the valence dimension (≥0,5). The Mean Strength indicates that the messages were predominantly assigned to piles with rather positive emotional valence.

| Message ID | Factor Loading | Message Text | Mean Strength |
|---|---|---|---|
| 05.1.b.02 | 0,81 | Dear Mrs. Koller! I'm glad to negotiate with you with this system. I also hope that the ongoing negotiation will be respectful and I wish that both of us reach a good result for each party. What do you think when we explain each other our preferences and importance issues? We then might be able to reach the optimum for all. Best regards, Mr. Husar | 1,83 |
| | | Dear Mrs. Koller, Thank you for your message. We at Metallurg | |

| | | | |
|---|---|---|---|
| 46.1.b.02 | 0,82 | Technologies are happy that you contacted us regarding cooperation. I am excited about our negotiation and hope we will reach an agreement as soon as possible. We consider the Joint Venture to be an ideal cooperation to produce your new Blue Star engines. We have couple of important issues to negotiate about and we at Metallurg Technologies have had long discussion about all of them. We have also discussed in details with the government here in Lviv concerning the new plants and about the infrastructure here in the region. Hope to hear from you as soon as possible and we can start our negotiation. Best regards, Mrs. Husar | 2 |

**Table 5: Examples for pleasure**

From the descriptions of the piles provided by the raters, it is possible to extract affect terms for messages found at each dimensional pole. For example:

| ***Valence*** | **Descriptions** |
|---|---|
| Pleasure | friendly, polite, professional, joyful, satisfied, happy, nice, considerate, cooperative |
| Displeasure | nervous, unfriendly, aggressive, angry, disappointed, distant, threatening, reluctant |

**Table 6: Raters' descriptions of the pleasure vs. displeasure dimension [D1]**

### C.4.3) Dimension n.2: alert/surprised vs. idle

The second dimension derived from the analysis indicates the level of idleness or surprise/alert in the negotiation messages. This particular dimension can be compared to the *arousal* (or *activation*) dimension typically found in models with a circular structure, like the one previously described. In this case, arousal refers to "subjective feelings of activation associated with an affective experience" (Barrett & Fossum, 2001, p. 2). In the present study, messages transmitting low arousal were found at the dimension pole labeled "idle", whereas, the messages transmitting high levels of arousal were found at the pole labeled "surprised/alert". This is somewhat consistent with recent research

on emotions, which argues that different negative emotions transmit different levels of arousal (Morris & Keltner, 2000). However, we argue that both positive as well as negative emotions, when expressed in negotiation messages, can have this property.

Accordingly, messages loading high on the second dimension express either emotions related to disappointment or unexpected, positive surprise (for examples see Table 7). Consistent with this logic, the emotional Mean Strength values for these messages can vary from emotionally positive to emotionally negative, depending on which side of the axis a specific message is situated in the circumplex.

| Message ID | Factor Loading | Message Text | Mean Strength |
|---|---|---|---|
| 11.1.a.12 | 0,94 | It took me about half an hour to find out how to accept/reject an offer. I'm so angry right now, that I just want to end this stupid negotiation - I figured the easiest way to do so is to accept your offer. Had a nice time negotiating. | 5,19 |
| 44.1.a.16 | 0,86 | Dear Husar! Thanks for the offer...I can finally accept the deal! It was nice doing business with you. Regards, Koller | 3,09 |

**Table 7: Examples for alert/surprised**

By contrast, messages with low loadings on this dimension in most cases consist of informal talk, proposals or questions (for examples see Table 8). Mean Strength values of these messages indicate that they were most frequently rated as being emotionally neutral.

| Message ID | Factor Loading | Message Text | Mean Strength |
|---|---|---|---|
| 22.0.b.01 | -0,87 | Dear Mr./Mrs. Husar, I would like to start our business relationship by discussing the duration of contract. My first offer is a joint venture of 3 years. Best regards, Mr. Koller | 3,14 |
| 21.0.a.09 | -0,84 | Dear Mr. Husar, I've completed the Vienna Mediator on the case of revenue sharing. Please let us continue the negotiation and let us know what you think of our latest offer. Best regards, Mr Koller | 3,45 |

**Table 8: Examples for idle**

Raters described these and similar messages using the following terms:

| *Arousal* | Descriptions |
|---|---|
| Alert/surprised | angry, astonished, offensive, disappointed, attacked / positive, friendly, direct |
| Idle | neutral, informal, emotionless, businesslike, calm, objective, cold, superficial |

**Table 9: Raters' descriptions of the alert/surprise vs. idle dimension [D2]**

### C.4.4) Additional Variables That Define the Quadrants of the Circumplex

As it has been thoroughly assessed in the previous paragraphs, emotion categories do not cluster at the dimensional axes, but they fall meaningfully into certain regions (quadrants) of the circumplex structure. The 45° bipolar axes account for such data items (in this case: messages) that can be related to the two dimensions to a different extent. For instance, messages with relatively high loadings both on the valence and on the arousal dimension cannot be perceived as having exclusively pleasant or arousing emotional content, but they represent a combination of these two. Consequently, there are two additional axes reflecting the following states: cheerful vs. unhappy and relaxed/calm vs. angry/aroused (Figure 3). Similarly, these were labeled exciting vs. gloomy and relaxing vs. distressing in the Circumplex Model by Russell (1980).

The following tables shed some light on the subject. Please observe that the Mean Strength indicates a positive emotional rating for the example for *cheerful* (1,57) and a negative rating for the example for *unhappy* (4,91).

| Message ID | Factor Loadings | | Message Text | Mean Strength |
|---|---|---|---|---|
| | *D1* | *D2* | | |
| 40.1.b.10 | 0,54 | 0,64 | Dear Mr. Koller, thank you for your reply and for our cooperation! I want to accept your last offer, but we both have to use Technical Assistant before. I wrote to support team and hope to get any information soon. Regarding costs and plants. It is very strange that we have different information, but I believe you and hope you believe me. I acted according my instruction and was sure that we will build 3 plants. Important is that our agreement is acceptable for both sides. I want to thank you for this work. I communicated with you with a big pleasure and will accept this offer as soon as I find this Assistant .Have a nice weekend also! =) | 1,57 |
| 30.1.b.03 | -0,65 | -0,56 | This is not negotiable; the secrecy clause must be signed by Metallurg! | 4,91 |

**Table 10: Examples for *cheerful* and *unhappy***

As one could expect, the Mean Strength value for the example for *relaxed/calm* (3,00) indicates significantly more emotionally positive rating than in the example for *angry/aroused* (6,43).

| Message ID | Factor Loadings | | Message Text | Mean Strength |
|---|---|---|---|---|
| | *D1* | *D2* | | |
| 23.1.b.09 | 0,50 | - 0,61 | Dear H. Husar, First of all, my apologies for giving you the impression that we are taking advantage of Metallurg Technologies. This is not the case at all. We are very pleased to be having your company as a cooperation partner en therefore I really hope we can manage this negotiation. As for your last offer, I am sorry to say that Mihalits finds the secrecy clause an important factor for this cooperation and insists of this attribute being a positive outcome for our company. For the other six attributes our company doesn't meet one aspiration level at all. All the attributes are down to the hard constraints and we did not insist on any extra's, excluding the secrecy clause of course. Therefore I hope you can trust us for being a perfect and suitable partner for our company and you are willing to agree on our terms. The utility of the contract I am hoping you will agree on, is for Mihalits AG 51%, which shows the respect we have for your company! And a contract period of 8 years is within this business not short at all, the market changes rapidly and a lot can happen, for both parties. I believe 8 years | 3,00 |

| | | | | |
|---|---|---|---|---|
| | | | is good length of period. Hope hearing from you. Yours faithfully, Katy Koller | |
| 49.0.a.17 | -0,66 | 0,67 | Now you're just trying to rob me! This secrecy clause is the one thing which is actually good for me, the rest I'm not happy with but I can live with. Hereby my new offer, I've downgraded the additional compensation of Ukrainian workers to 10 %. | 6,43 |

**Table 11: Examples for *relaxed/calm* and *angry/aroused***

As visible in the next table, the descriptions of the messages found at the extremes of the previously described 45° rotated axes clearly represent combinations of descriptions of the valence and arousal dimensions as outlined in Tables 6 and 9.

| ***Label*** | **Descriptions** |
|---|---|
| Cheerful | Friendly, polite, considerate, happy, optimistic, joyful, excited |
| Unhappy | Unfriendly, assertive, nervous, negative, disappointed, worried, direct |
| Relaxed/calm | Friendly, satisfied, positive, cooperative, formal, pleased, factual |
| Angry/aroused | Nervous, very emotional, stressed, angry, unfriendly, rude, furious |

**Table 12: Raters' descriptions of the**

Hence, this further supports our interpretation of the model and its conformity with the Circumplex Model of Affect.

## C.5) Emotional Dynamics

*All social phenomena unfold and change over time, and one of the best ways to understand them is to discover how they are born, develop and terminate […].* (Holmes & Poole, 1991)

Research in the field of emotions mainly perceives emotions either as predictors of certain behavior and outcomes, or as consequences of certain behaviors and events (Barry, 2007). By acknowledging that emotions need to be considered

as triggers as well as consequences, we argue that it is necessary to take a dynamic point of view in order to understand the complex emotional processes that constantly evolve in negotiations. Emotions are dynamic, interpersonal forces that, by means of emotional interchange, have the tendency to result in spirals of emotional behavior (Brett et al., 1998). Negotiations, on the other hand, are also processes that evolve over time, passing through different phases (Adair & Brett, 2005; Holmes, 1992; Mara Olekalns, 2002; Weingart & Olekalns, 2004). Phase analysis plays a big role in identifying the procedural dynamics in negotiations (S. Koeszegi, Pesendorfer, & Vetschera, 2008) and provides valuable insight into patterns of interaction (Brett et al., 1998).

Phase models most commonly suggest that negotiations follow a specific sequence of phases, namely (1) an initiation phase, which involves relational positioning, showing of preferences and initial persuasion, (2) a problem solving phase, where negotiators exchange information and offers, try to build a relationship and generate solutions using factual discussion and persuasion, and (3) a resolution phase, where a detailed agreement is formulated and executed (Adair & Brett, 2005; Broekens & Jonker, 2010; Douglas, 1962; Holmes, 1992; Weingart & Olekalns, 2004). Morris & Keltner (2000) argue that "[…] the phase structure of negotiations arises because negotiations involve a series of linked relational problems and these problems trigger distinct emotions" (p.23). It stands to reason that the identification of negotiation phases and of the accompanying emotional dynamics that orchestrate changes from one phase to the next is crucial for the understanding of emotional behavior that constantly evolves during the negotiation.

For the purposes of our analysis, we divided each negotiation in three phases, which gave us the opportunity to investigate and compare the evolving emotional dynamics and the impact of DSS and NSS on negotiations with the same number of phases. If we compare the distribution of Pleasure vs. Displeasure (D1) and Alert vs. Calm (D2) by agreement for negotiations with and without DSS, we are able to arrive to some interesting findings. The first obvious finding, visible in Figures 5 and 6, is that both failed and successful negotiations evolve through different levels of pleasure/displeasure throughout the three phases. Negotiations that ended in agreement have a different pattern

of pleasure/displeasure throughout the phases than negotiations that ended in an impasse. However, there seems to be no difference in the effect of DSS on the emotional dynamics of successful and failed negotiations.

In negotiations that ended in agreement, we observe high levels of pleasure in the first phase, followed by a fairly significant drop in pleasure in the second phase. The final phase brings back high pleasure levels which marks the end of a successful negotiation. This V-pattern indicating a decrease of pleasure to a neutral emotional level might be accounted for by the exchange of offers, rational persuasion and discussion that takes place in this (problem solving) phase. The later increase of pleasure implies that the previous problems have been resolved and a mutual ground has been found.

Negotiations where no agreement was reached also have a distinct pattern that remains the same in both cases (without DSS and with DSS). These negotiations are characterized by a constant decrease of pleasure throughout the phases. Failed negotiations therefore start off similarly to successful negotiations, with the only difference being that they remain stuck in the problem solving phase and the incapability to resolve issues leads the negotiators to experience even more displeasure in the last phase, which causes a negative emotional spiral that finally results in an impasse.

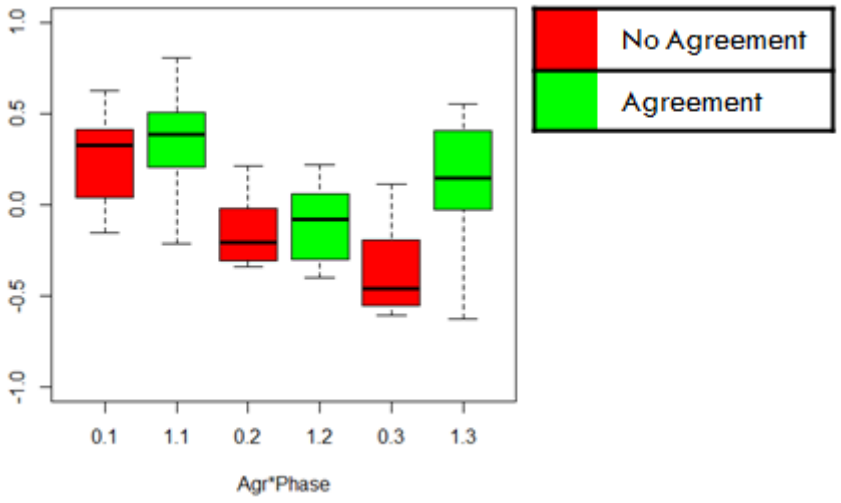


**Figure 5: Pleasure/Displeasure Distribution by Agreement for Negotiations without DSS**

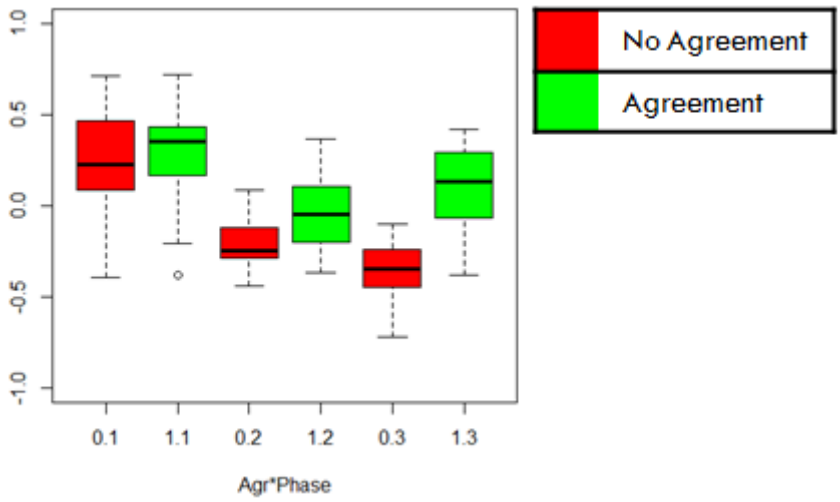


**Figure 6: Pleasure/Displeasure Distribution by Agreement for Negotiations with DSS**

In the first two phases, there is no significant difference in the levels of pleasure/displeasure between successful and failed negotiations. However, in the last phase we can observe that successful negotiations are characterized by significantly more pleasure than failed negotiations, which contain high levels of displeasure. The distribution of loadings of the arousal dimension indicates that arousal changes over time, in both failed and successful negotiations. There is no visible outcome effect, i.e. successful negotiations do not differ on alert/calm from failed negotiations. In fact, they both seem to evolve in the same manner over time, with constant increases of the level of arousal from phase 1 to phase 3. The only difference between negotiations with and without DSS seems to be that when DSS is present, the distribution of alert/calm is more dispersed than in cases without DSS. This could be explained by the effect of additional information provided by DSS on the negotiators' level of arousal.

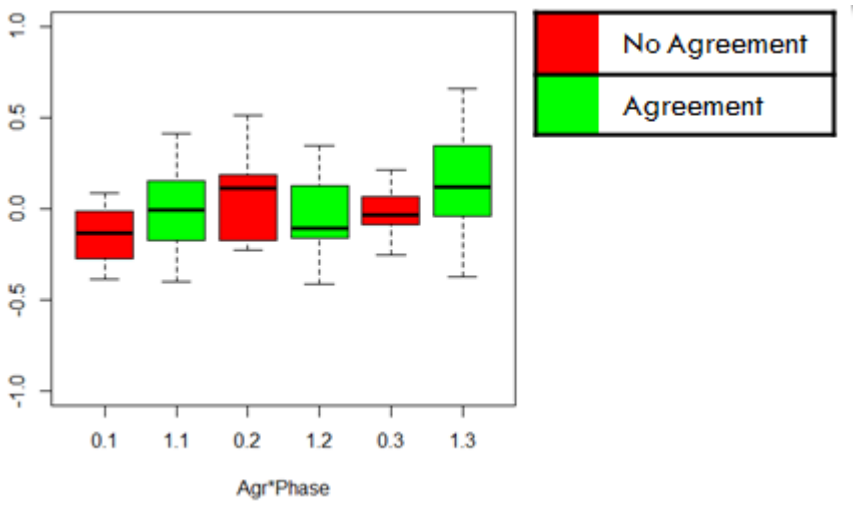


**Figure 7: Alert/Calm Distribution by Agreement for Negotiations without DSS**

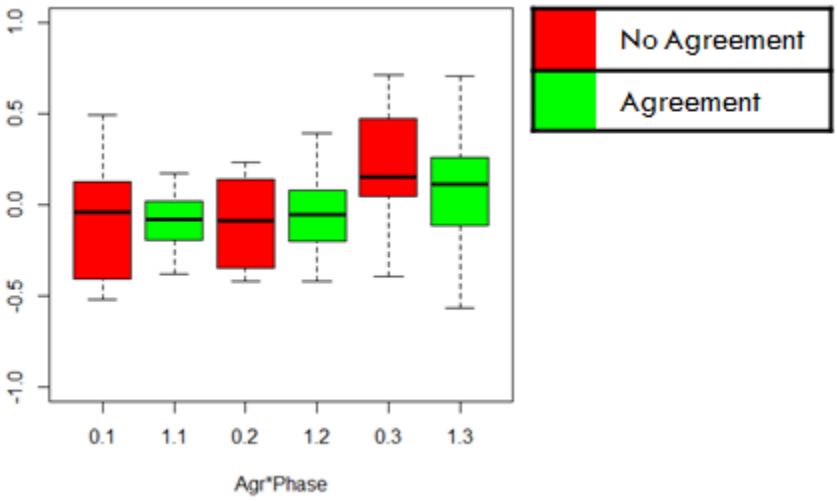


**Figure 8: Alert/Calm Distribution by Agreement for Negotiations with DSS**

The next two figures (Figure 9 and 10) are examples of the progression of a successful and a failed negotiation through time. The portrayal of the negotiators' movements (i.e. the emotional strength of their messages) in the two-dimensional space is intended to give us a mental image of the dynamics of their interaction. Like before, the x-axis represents the pleasure/displeasure and the y-axis the alert/calm dimension. In Figure 9, we see a negotiation that starts off with a pleasant and relaxed tone, only to become slightly more alert when the first offer is sent. Then we observe a series of counteroffers that contain and result in high levels of alertness of both negotiators. When it finally comes to the

first use of VienNA (indicated by the green line), the arousal slightly decreases, but displeasure increases because the negotiators might realize their mistakes and their remaining options. However, they manage to resolve their problems and VienNA (blue line) in the last phase brings the negotiation to a successful end.

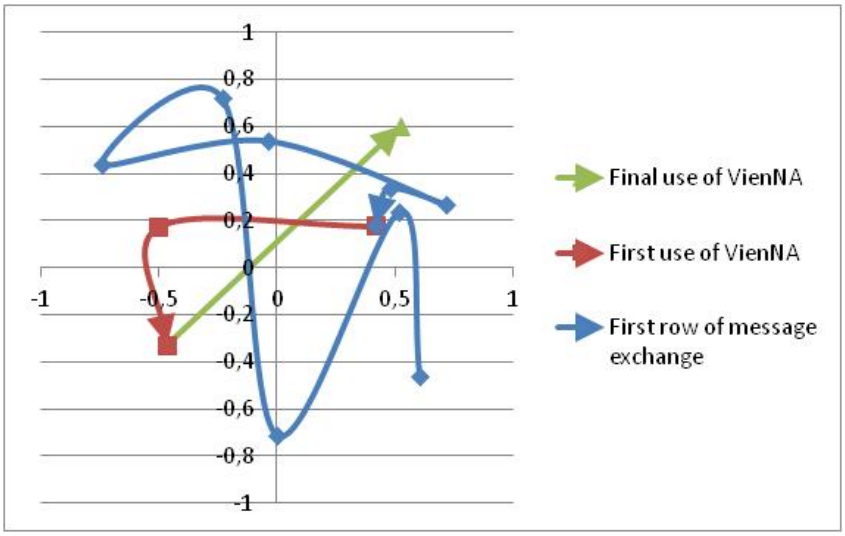


**Figure 9: Two-dimensional Plot of a Successful Negotiation (Negotiation n° 12)**

The example of a failed negotiation portrayed in Figure 10 is visually different than the one in Figure 9. This is because this particular negotiation evolves differently and is characterized by emotions that score low on both the pleasure/displeasure and the alert/calm dimensions. Although it starts off in a relaxed and neutral tone, the subsequent messages contain high levels of displeasure, unhappiness and even anger. VienNA is successful in lowering arousal the first time it is used, however, later use of VienNA results in an escalation of anger and displeasure which leads to an impasse.

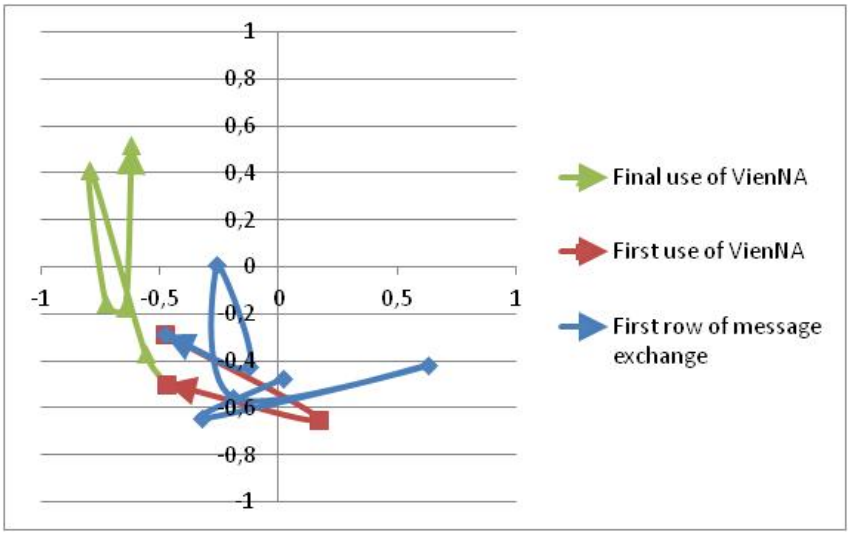


**Figure 10: Two-dimensional Plot of a Failed Negotiation (Negotiation n° 9)**

## C.6) Results

In chapter C.6.1 we will shortly describe the method used to obtain the results which we used to draw conclusions about the research questions. They will be presented subsequently in the next few chapters.

### C.6.1) Method

Our goal was to compare the difference in means between negotiations with/without DSS, those who ended in agreement/disagreement and those who are characterized by the use of VienNA in different phases of the negotiation. Therefore, we performed independent sample t-tests (mean value comparisons) in the search for results for our research questions. Independent sample t-tests convey the significance of differences in means between specific groups. Significance implies that we reject the null hypothesis which implies that the

group means are equal and therefore conclude that they are significantly different. We are using the significance level of 0.10 as the upper threshold for significant results ($p<0.10$), while results that point to $p<0.01$ will be considered highly significant. Because of the multiple comparisons that were performed, we used alpha adjustments to control for falsely rejected hypotheses. The alpha adjustment being used is the False Discovery Rate (FDR), developed by Benjamini & Hochberg (1995) who argued that this specific alpha adjustment is more advantageous than others (e.g. the Bonferroni adjustment) because of its increased power.

We looked at the differences in loadings on both the pleasure/displeasure and the alert/calm dimension and the similarity of emotions between negotiators. Besides that, we investigated the differences in contract imbalance between negotiators throughout the negotiation. Contract imbalance is the difference between a sender's best and a receiver's worst utility on a transmitted offer. To do all this, we made use of dyadic indexes designed to assess similarity/dissimilarity across a set of items for each dyad (Kenny, Kashy, & Cook, 2006). Specifically, we tested the correlation, discrepancy and intraclass correlation dyadic indexes.

Whereas all three indexes provide a measure of similarity/dissimilarity, the discrepancy measure proved to be best suited for our interpretation of the results, as it provides the most consistent results and is in accordance with recommendations by Kenny et al. (2006). The discrepancy measure is the sum of absolute differences divided by the number of dyadic exchanges per negotiation phase. Therefore, we include this dyadic index in the following sections because of its value to the interpretation and discussion of the final results. Similarity measures provide "[…] a unique estimate of the relationship between scores from indistinguishable dyad members" (Kenny et al., 2006, p. 33). This is particularly important in our case because we are not able to differentiate between dyad members based on their gender, nationality or other meaningful characteristics. The negotiators could be distinguished in terms of their company affiliation (Mihalits or Metallurg), but we argue that this did not influence their behavior in any way. A dissimilarity measure like the discrepancy index assumes perfect similarity from the start, and measures how dissimilar

the items are later on. Any score that is nonzero indicates some dissimilarity and larger scores are signs of larger dissimilarity. Statistical results on all these items and measures gave us valuable insight in the effects of the use of DSS and VienNa on the negotiation. Furthermore, it has presented us with the opportunity to make a contribution to current research on the complex dynamics of emotions in online negotiations. We will subsequently describe the main results of our analysis by investigating the emotional dynamics on the level of the whole negotiation and on the level of the single phases.

### C.6.2) Results for *DSS vs. No DSS*

The first group of results is intended to give us insight into the differences between negotiations with decision support and those without decision support. Moreover, we look at these differences separately, only in negotiations that ended in agreement and only in negotiations that ended in disagreement. The overall results on the level of the whole negotiation, for those that ended in agreement, indicate that there is no difference in emotions between negotiations with and without DSS, as indicated by the adjusted significance values in Table 13. We also found no differences in emotional (dis)similarity or contract imbalance on this level of investigation.

| | t-test for Equality of Means | | | **Group Statistics** | | | **Adjusted Sig.** |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| o_CI | -1,931 | 36 | ,061 | 1 | 21 | ,4853 | 0.3069465 |
| | | | | 0 | 17 | ,5585 | |
| o_D1 | ,296 | 36 | ,769 | 1 | 21 | ,079687 | 0.7692695 |
| | | | | 0 | 17 | ,063260 | |
| o_D1_Disc | ,691 | 36 | ,494 | 1 | 21 | ,231523 | 0.7692695 |
| | | | | 0 | 17 | ,217030 | |
| o_D2 | -,845 | 36 | ,404 | 1 | 21 | -,020284 | 0.7692695 |
| | | | | 0 | 17 | ,030715 | |
| o_D2_Disc | -,371 | 36 | ,713 | 1 | 21 | ,218780 | 0.7692695 |
| | | | | 0 | 17 | ,225574 | |

**Table 13: Overall Results for *DSS vs. No DSS/Agreement***

The results pertaining to unsuccessful negotiations also do not indicate any significant differences in emotions, emotional similarity or contract imbalance between negotiations with and without DSS.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| o_CI | -,607 | 17 | ,552 | 1 | 11 | ,5264 | 0.6823138 |
| | | | | 0 | 8 | ,5647 | |
| o_D1 | -,519 | 17 | ,610 | 1 | 11 | -,143144 | 0.6823138 |
| | | | | 0 | 8 | -,100720 | |
| o_D1_Disc | ,681 | 17 | ,505 | 1 | 11 | ,225983 | 0.6823138 |
| | | | | 0 | 8 | ,203176 | |
| o_D2 | ,416 | 17 | ,682 | 1 | 11 | ,010411 | 0.6823138 |
| | | | | 0 | 8 | -,025293 | |
| o_D2_Disc | ,707 | 17 | ,489 | 1 | 11 | ,271839 | 0.6823138 |
| | | | | 0 | 8 | ,244830 | |

**Table 14: Overall Results for *DSS vs. No DSS*/No Agreement**

As for the first phase of the negotiation, we again observed no indication of DSS influence on differences in contract imbalance and emotional dimensions, whether it ended in agreement (Table 15) or not (Table16).

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph1_CI | 1,179 | 36 | ,246 | 1 | 21 | ,7355 | 0.4100825 |
| | | | | 0 | 17 | ,6174 | |
| ph1_D1 | -,794 | 36 | ,432 | 1 | 21 | ,277322 | 0.5402104 |
| | | | | 0 | 17 | ,349767 | |
| ph1_D1_Disc | -,270 | 36 | ,789 | 1 | 21 | ,194534 | 0.8013663 |
| | | | | 0 | 17 | ,203331 | |
| ph1_D2 | -1,226 | 36 | ,228 | 1 | 21 | -,081303 | 0.4100825 |
| | | | | 0 | 17 | -,005643 | |
| ph1_D2_Disc | 2,307 | 36 | ,027 | 1 | 21 | ,261479 | 0.1344805 |
| | | | | 0 | 17 | ,168269 | |

**Table 15: Phase 1 Results for *DSS vs. No DSS*/Agreement**

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph1_CI | 1,096 | 17 | ,288 | 1 | 11 | ,7028 | 0.8782543 |
| | | | | 0 | 8 | ,5080 | |
| ph1_D1 | -,171 | 17 | ,866 | 1 | 11 | ,229159 | 0.8782543 |
| | | | | 0 | 8 | ,254485 | |
| ph1_D1_Disc | -,156 | 17 | ,878 | 1 | 11 | ,241211 | 0.8782543 |
| | | | | 0 | 8 | ,256117 | |
| ph1_D2 | ,423 | 17 | ,678 | 1 | 11 | -,091362 | 0.8782543 |
| | | | | 0 | 8 | -,145268 | |
| ph1_D2_Disc | ,216 | 17 | ,832 | 1 | 11 | ,196825 | 0.8782543 |
| | | | | 0 | 8 | ,183575 | |

**Table 16: Phase 1 Results for *DSS vs. No DSS*/No Agreement**

Moving on to the second phase, there is indication of significant differences in contract imbalance between negotiations with and without DSS in the case of successful negotiations (Table 17). Specifically, these results imply that contract imbalance is bigger in negotiations without DSS than in negotiations with DSS. Otherwise, no significant results pertaining to emotions and emotional similarity were found in this phase.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph2_CI | -2,545 | 36 | ,015 | 1 | 21 | ,4630 | 0.0767325 |
| | | | | 0 | 17 | ,5997 | |
| ph2_D1 | ,954 | 36 | ,347 | 1 | 21 | -,043256 | 0.8663015 |
| | | | | 0 | 17 | -,108513 | |
| ph2_D1_Disc | ,067 | 36 | ,947 | 1 | 21 | ,220851 | 0.9469504 |
| | | | | 0 | 17 | ,218937 | |
| ph2_D2 | -,394 | 36 | ,696 | 1 | 21 | -,046551 | 0.8696800 |
| | | | | 0 | 17 | -,018187 | |
| ph2_D2_Disc | -,591 | 36 | ,558 | 1 | 21 | ,208798 | 0.8696800 |
| | | | | 0 | 17 | ,223184 | |

**Table 17: Phase 2 Results for *DSS vs. No DSS*/Agreement**

For failed negotiations, no significant differences between DSS and No DSS groups in the second phase were found (Table 18).

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph2_CI | -1,095 | 17 | ,289 | 1 | 11 | ,5389 | 0.4815587 |
| | | | | 0 | 8 | ,6074 | |
| ph2_D1 | -,553 | 17 | ,588 | 1 | 11 | -,194455 | 0.5875060 |
| | | | | 0 | 8 | -,150486 | |
| ph2_D1_Disc | 1,418 | 17 | ,174 | 1 | 11 | ,232299 | 0.4815587 |
| | | | | 0 | 8 | ,183212 | |
| ph2_D2 | -1,279 | 17 | ,218 | 1 | 11 | -,085912 | 0.4815587 |
| | | | | 0 | 8 | ,066893 | |
| ph2_D2_Disc | ,890 | 17 | ,386 | 1 | 11 | ,277726 | 0.4823065 |
| | | | | 0 | 8 | ,235454 | |

**Table 18: Phase 2 Results for *DSS vs. No DSS*/No Agreement**

Nevertheless, the results show a significant difference in contract imbalance in the final phase of successful negotiations (Table 19), again indicating that there is more contract imbalance in negotiations without DSS. Also, there is indication of differences in emotional dissimilarity on the pleasure/displeasure dimension between the two groups of negotiations. According to this specific result, there is more similarity of pleasure/displeasure in negotiations without DSS. However, no differences of mean loadings on any of the two emotional dimensions were found.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph3_CI | -3,618 | 36 | ,001 | 1 | 21 | ,257286 | 0.0027220 |
| | | | | 0 | 17 | ,458549 | |
| ph3_D1 | -,303 | 36 | ,764 | 1 | 21 | ,090158 | 0.7637621 |
| | | | | 0 | 17 | ,118115 | |
| ph3_D1_Disc | 2,180 | 36 | ,036 | 1 | 21 | ,303015 | 0.0896905 |
| | | | | 0 | 17 | ,215130 | |
| ph3_D2 | -,558 | 36 | ,580 | 1 | 21 | ,077909 | 0.7255422 |
| | | | | 0 | 17 | ,138130 | |
| ph3_D2_Disc | -1,130 | 36 | ,266 | 1 | 21 | ,210411 | 0.4434458 |
| | | | | 0 | 17 | ,264010 | |

**Table 19: Phase 3 Results for *DSS vs. No DSS*/Agreement**

On the other hand, no significant results were found in the final phase of failed negotiations, indicating that negotiations with and without DSS are emotionally similar in phase 3 when no agreement is reached.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | DSS | N | Mean | |
| ph3_CI | -2,396 | 16 | ,029 | 1 | 11 | ,337455 | 0.1457040 |
| | | | | 0 | 7 | ,549163 | |
| ph3_D1 | -,225 | 16 | ,825 | 1 | 11 | -,376360 | 0.8251154 |
| | | | | 0 | 7 | -,351612 | |
| ph3_D1_Disc | -1,086 | 15 | ,294 | 1 | 10 | ,178936 | 0.4907333 |
| | | | | 0 | 7 | ,250662 | |
| ph3_D2 | 1,431 | 16 | ,172 | 1 | 11 | ,195125 | 0.4288995 |
| | | | | 0 | 7 | -,015488 | |
| ph3_D2_Disc | -,261 | 15 | ,798 | 1 | 10 | ,278489 | 0.8251154 |
| | | | | 0 | 7 | ,301771 | |

**Table 20: Phase 3 Results for *DSS vs. No DSS*/No Agreement**

In sum, negotiations started off in a similar manner irrespective of whether they ended in agreement or not. In fact, with respect to the first research question, it seems that DSS does not have any effect on the emotional behavior of negotiators in the first two phases of the negotiation. However, when negotiations reach the final phase, the DSS effect of lowering the contract imbalance between negotiators is significant in the case of successful negotiations. Also, participants in successful negotiations without DSS are significantly more emotionally similar on the pleasure/displeasure dimension in the end than participants in negotiations with DSS.

### C.6.3) Results for *Agreement vs. No Agreement*

Within this section, we are going to present the results obtained by investigating the difference in means between negotiations that ended in agreement and

those that did not. We did not only look at the big picture, but we also investigated these differences limiting the analysis only to negotiations with DSS and only to negotiations without DSS, because we are interested in the role DSS plays in successful and unsuccessful negotiations.

The findings on the level of the whole negotiation (with DSS) point to a highly significant difference in mean pleasure/displeasure (D1) between negotiations that ended in agreement and those that ended in an impasse, indicating that negotiations that ended in agreement are characterized by significantly higher levels of pleasure than negotiations that failed. No significant results pertaining to contract imbalance were found on the level of the whole negotiation. However, the adjusted significance level suggests that there is a difference in dissimilarity of alert/calm (D2) between successful and failed negotiations. The results show that there is more similarity on the second dimension in negotiations that ended in agreement.

| | t-test for Equality of Means | | | **Group Statistics** | | | **Adjusted Sig.** |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| o_CI | -1,040 | 30 | ,307 | 1 | 21 | ,4853 | 0.5109542 |
| | | | | 0 | 11 | ,5264 | |
| o_D1 | 3,585 | 30 | ,001 | 1 | 21 | ,079687 | 0.0058875 |
| | | | | 0 | 11 | -,143144 | |
| o_D1_Disc | ,235 | 30 | ,816 | 1 | 21 | ,231523 | 0.8157211 |
| | | | | 0 | 11 | ,225983 | |
| o_D2 | -,408 | 30 | ,686 | 1 | 21 | -,020284 | 0.8157211 |
| | | | | 0 | 11 | ,010411 | |
| o_D2_Disc | -2,433 | 30 | ,021 | 1 | 21 | ,218780 | 0.0528325 |
| | | | | 0 | 11 | ,271839 | |

**Table 21: Overall Results for *Agreement vs. No Agreement*/DSS**

However, when we limited our investigation only to negotiations without DSS, we obtained no significant results, indicating that successful and failed negotiations are similar when there is no DSS.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| o_CI | -,101 | 23 | ,921 | 1 | 17 | ,5585 | 0.9206182 |
| | | | | 0 | 8 | ,5647 | |
| o_D1 | 2,141 | 23 | ,043 | 1 | 17 | ,063260 | 0.2155060 |
| | | | | 0 | 8 | -,100720 | |
| o_D1_Disc | ,454 | 23 | ,654 | 1 | 17 | ,217030 | 0.8180303 |
| | | | | 0 | 8 | ,203176 | |
| o_D2 | ,819 | 23 | ,421 | 1 | 17 | ,030715 | 0.8180303 |
| | | | | 0 | 8 | -,025293 | |
| o_D2_Disc | -,609 | 23 | ,549 | 1 | 17 | ,225574 | 0.8180303 |
| | | | | 0 | 8 | ,244830 | |

**Table 22: Overall Results for *Agreement vs. No Agreement*/No DSS**

In the initial phase of the negotiation, no significant differences between successful and failed negotiations were found on any level in both groups of negotiations (DSS and No DSS), as attested by Tables 23 and 24.This shows that negotiations in each separate group tend to start off similarly, irrespective of whether they end up in agreement or not.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph1_CI | ,284 | 30 | ,779 | 1 | 21 | ,7355 | 0.9246399 |
| | | | | 0 | 11 | ,7028 | |
| ph1_D1 | ,429 | 30 | ,671 | 1 | 21 | ,277322 | 0.9246399 |
| | | | | 0 | 11 | ,229159 | |
| ph1_D1_Disc | -1,135 | 30 | ,265 | 1 | 21 | ,194534 | 0.9246399 |
| | | | | 0 | 11 | ,241211 | |
| ph1_D2 | ,120 | 30 | ,906 | 1 | 21 | -,081303 | 0.9246399 |
| | | | | 0 | 11 | -,091362 | |
| ph1_D2_Disc | 1,222 | 30 | ,231 | 1 | 21 | ,261479 | 0.9246399 |
| | | | | 0 | 11 | ,196825 | |

**Table 23: Phase 1 Results for *Agreement vs. No Agreement*/DSS**

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph1_CI | ,707 | 23 | ,487 | 1 | 17 | ,6174 | 0.7312301 |
| | | | | 0 | 8 | ,5080 | |
| ph1_D1 | ,794 | 23 | ,435 | 1 | 17 | ,349767 | 0.7312301 |
| | | | | 0 | 8 | ,254485 | |
| ph1_D1_Disc | -,697 | 23 | ,493 | 1 | 17 | ,203331 | 0.7312301 |
| | | | | 0 | 8 | ,256117 | |
| ph1_D2 | 1,538 | 23 | ,138 | 1 | 17 | -,005643 | 0.6884295 |
| | | | | 0 | 8 | -,145268 | |
| ph1_D2_Disc | -,348 | 23 | ,731 | 1 | 17 | ,168269 | 0.7312301 |
| | | | | 0 | 8 | ,183575 | |

**Table 24: Phase 1 Results for *Agreement vs. No Agreement*/No DSS**

T-tests performed for phase 2 of the negotiation did not provide any significant results neither for negotiations with DSS nor for those without DSS (see Tables 25 and 26), again indicating that negotiations tend to evolve in a similar manner regardless of DSS.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph2_CI | -1,258 | 30 | ,218 | 1 | 21 | ,4630 | 0.3635655 |
| | | | | 0 | 11 | ,5389 | |
| ph2_D1 | 2,080 | 30 | ,046 | 1 | 21 | -,043256 | 0.1193155 |
| | | | | 0 | 11 | -,194455 | |
| ph2_D1_Disc | -,421 | 30 | ,677 | 1 | 21 | ,220851 | 0.6771072 |
| | | | | 0 | 11 | ,232299 | |
| ph2_D2 | ,454 | 30 | ,653 | 1 | 21 | -,046551 | 0.6771072 |
| | | | | 0 | 11 | -,085912 | |
| ph2_D2_Disc | -2,064 | 30 | ,048 | 1 | 21 | ,208798 | 0.1193155 |
| | | | | 0 | 11 | ,277726 | |

**Table 25: Phase 2 Results for *Agreement vs. No Agreement*/DSS**

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph2_CI | -,122 | 23 | ,904 | 1 | 17 | ,5997 | 0.9035958 |
| | | | | 0 | 8 | ,6074 | |
| ph2_D1 | ,485 | 23 | ,632 | 1 | 17 | -,108513 | 0.8919681 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 0 | 8 | -,150486 | |
| ph2_D1_Disc | ,873 | 23 | ,392 | 1 | 17 | ,218937 | 0.8919681 |
| | | | | 0 | 8 | ,183212 | |
| ph2_D2 | -,854 | 23 | ,402 | 1 | 17 | -,018187 | 0.8919681 |
| | | | | 0 | 8 | ,066893 | |
| ph2_D2_Disc | -,372 | 23 | ,714 | 1 | 17 | ,223184 | 0.8919681 |
| | | | | 0 | 8 | ,235454 | |

**Table 26: Phase 2 Results for *Agreement vs. No Agreement*/No DSS**

Moving on to the final phase, we have found several significant results. First of all, in negotiations with DSS there is significantly more pleasure (less displeasure) in negotiations that ended in agreement. Also, the results show that there is more similarity in pleasure/displeasure in failed negotiations with presence of DSS than in successful negotiations.

| | t-test for Equality of Means | | | **Group Statistics** | | | **Adjusted Sig.** |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph3_CI | -1,012 | 30 | ,320 | 1 | 21 | ,257286 | 0.3631845 |
| | | | | 0 | 11 | ,337455 | |
| ph3_D1 | 5,460 | 30 | ,000 | 1 | 21 | ,090158 | 0.0000320 |
| | | | | 0 | 11 | -,376360 | |
| ph3_D1_Disc | 2,747 | 29 | ,010 | 1 | 21 | ,303015 | 0.0255980 |
| | | | | 0 | 10 | ,178936 | |
| ph3_D2 | -,923 | 30 | ,363 | 1 | 21 | ,077909 | 0.3631845 |
| | | | | 0 | 11 | ,195125 | |
| ph3_D2_Disc | -1,275 | 29 | ,213 | 1 | 21 | ,210411 | 0.3541675 |
| | | | | 0 | 10 | ,278489 | |

**Table 27: Phase 3 Results for *Agreement vs. No Agreement*/DSS**

In phase 3 of negotiations without DSS, the results also show that there is significantly more pleasure in successful negotiations than in failed negotiations, which indicates that in the end, successful negotiations without DSS will be defined by high pleasure messages. Otherwise we have not found any significant results pertaining to emotional similarity or contract imbalance in this particular negotiation subgroup.

| | t-test for Equality of Means | | | Group Statistics | | | Adjusted Sig. |
|---|---|---|---|---|---|---|---|
| | T | Df | Sig. (2-tailed) | Agr | N | Mean | |
| ph3_CI | -2,013 | 22 | ,057 | 1 | 17 | ,458549 | 0.1412835 |
| | | | | 0 | 7 | ,549163 | |
| ph3_D1 | 3,360 | 22 | ,003 | 1 | 17 | ,118115 | 0.0141455 |
| | | | | 0 | 7 | -,351612 | |
| ph3_D1_Disc | -,574 | 22 | ,572 | 1 | 17 | ,215130 | 0.6401277 |
| | | | | 0 | 7 | ,250662 | |
| ph3_D2 | 1,154 | 22 | ,261 | 1 | 17 | ,138130 | 0.4349978 |
| | | | | 0 | 7 | -,015488 | |
| ph3_D2_Disc | -,474 | 22 | ,640 | 1 | 17 | ,264010 | 0.6401277 |
| | | | | 0 | 7 | ,301771 | |

**Table 28: Phase 3 Results for *Agreement vs. No Agreement*/No DSS**

Therefore, with reference to the second research question, we found no differences between successful and failed negotiations in phases 1 and 2, because both tend to start and evolve in a similar manner as the parties introduce and try to position themselves in the negotiation. However, as they reach the last phase, results indicate that negotiators show more pleasure in successful negotiations both with and without DSS.

### C.6.4) Results According to VienNA Use

The results presented in this section are aimed to provide answers to the third research question, pertaining to the use of the Negotiator Assistant within specific negotiation phases. We found that, because of the limitations caused by relatively small sample size that is in some cases reduced to just one or two negotiations, the use of t-tests would be highly inappropriate and counterproductive. That is why we used only qualitative analysis via descriptive statistics in this part of our research.

Specifically, we investigated the effects of using the VienNA assistant in a specific phase by looking at the mean values of contract imbalance,

pleasure/displeasure, alert/calm and their discrepancy indexes in each phase of the negotiation. As the results pertaining to failed negotiations sometimes have a sample size reduced to one negotiation, we will only describe the results for successful negotiations with and without DSS.

### *C.6.4.1) VienNA Use in Phase 1*

In Table 29, we can observe descriptive statistics for negotiations in which VienNA was used in the first phase. If we compare the means according to whether DSS was present in the negotiation or not, we see that the contract imbalance in the first phase is bigger in negotiations without DSS. This is also consistent with the results found in chapter C.6.2. When there is no DSS, the maximum contract imbalance in phase 1 can reach 1.00, but when DSS is present the highest possible contract imbalance is just 0.55. As visible in Figure 11, there is no big difference in mean pleasure/displeasure between negotiations with and without DSS in phase 1. However in phase 2, pleasure is highly reduced in negotiations with DSS when compared to negotiations without DSS, where pleasure is lower than in the previous phase, but still positive. In phase 3, we observe an increase in pleasure in both groups of negotiations, however those without DSS are characterized by more pleasure in the end.

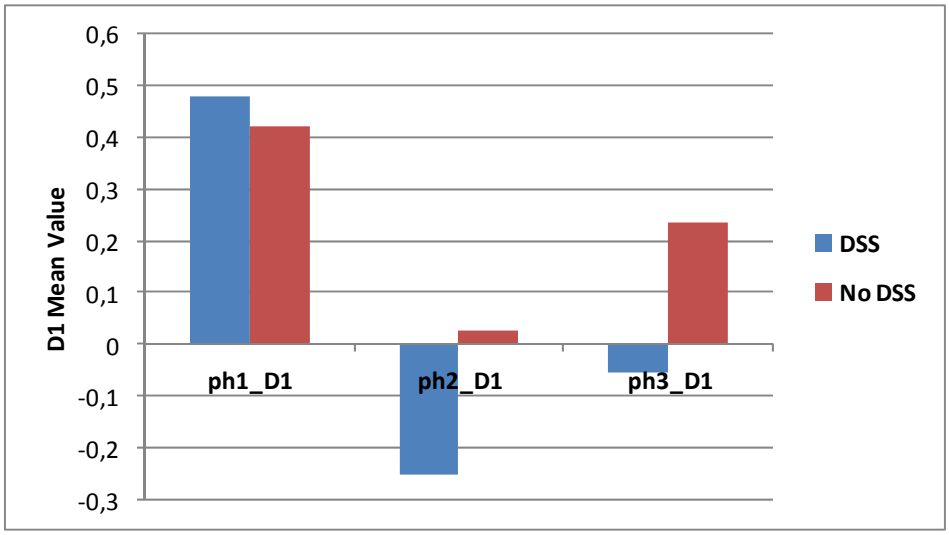


**Figure 11: Mean Values of Pleasure/Displeasure/VienNA Use in Phase 1**

Also, it is indicated by the results (Table 29) that in phase 3 there is more similarity in pleasure/displeasure between negotiators in negotiations without DSS. When VienNA is used in the first phase of a negotiation with DSS, results imply that the negotiators are more calm/idle than in negotiations without DSS in all three phases. The negotiators' arousal seems to increase radically in the final phase of the negotiation in both negotiations with and without DSS.

| | DSS | | | | No DSS | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | N | Minimum | Maximum | Mean |
| ph1_CI | 2 | ,08 | ,55 | ,3125 | 3 | ,42 | 1,00 | ,7178 |
| ph1_D1 | 2 | ,2415 | ,7182 | ,479850 | 3 | ,2038 | ,6499 | ,420367 |
| ph1_D1_Disc | 2 | ,1025 | ,1847 | ,143600 | 3 | ,0254 | ,3847 | ,201033 |
| ph1_D2 | 2 | -,1511 | ,1635 | ,006200 | 3 | -,1098 | ,3268 | ,122500 |
| ph1_D2_Disc | 2 | ,1441 | ,2081 | ,176100 | 3 | ,0903 | ,2920 | ,198833 |
| ph2_CI | 2 | ,53 | ,55 | ,5392 | 3 | ,30 | ,54 | ,4422 |
| ph2_D1 | 2 | -,3066 | -,2010 | -,253800 | 3 | -,1250 | ,2115 | ,026667 |
| ph2_D1_Disc | 2 | ,2840 | ,3361 | ,310050 | 3 | ,1994 | ,5258 | ,334633 |
| ph2_D2 | 2 | -,2194 | ,2368 | ,008700 | 3 | -,1161 | ,2598 | ,022733 |
| ph2_D2_Disc | 2 | ,1743 | ,3545 | ,264400 | 3 | ,1219 | ,3035 | ,242033 |
| ph3_CI | 2 | ,3900 | ,4700 | ,430000 | 3 | ,4200 | ,4800 | ,445833 |
| ph3_D1 | 2 | -,3786 | ,2706 | -,054000 | 3 | -,0167 | ,5558 | ,235233 |
| ph3_D1_Disc | 2 | ,2101 | ,3725 | ,291300 | 3 | ,1344 | ,1475 | ,140767 |
| ph3_D2 | 2 | -,0396 | ,5435 | ,251950 | 3 | ,1118 | ,6396 | ,315533 |
| ph3_D2_Disc | 2 | ,1301 | ,1347 | ,132400 | 3 | ,1098 | ,2858 | ,168600 |

**Table 29: Descriptive Statistics for *VienNA Use* in Phase 1**

### *C.6.4.2) VienNA Use in Phase 2*

When we narrowed the field of investigation only to negotiations in which the Negotiator Assistant was used in the second phase, the results we obtained suggested that there is more pleasure in phase 1 in negotiations without DSS

than in those with DSS. However, in the second phase, even though negotiators in both negotiations with and without DSS experience a decrease of pleasure, the decrease is smaller in negotiations with DSS. An increase in pleasure is characteristic for the last phase of successful negotiations, which in this case is significantly larger in negotiations with DSS, as indicated in Figure 12.

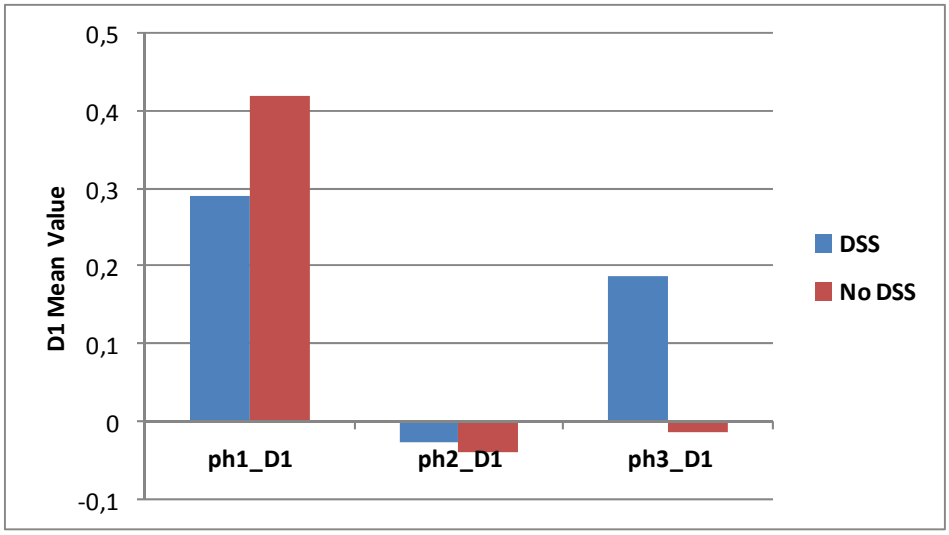


**Figure 12: Mean Values of Pleasure/Displeasure/VienNA Use in Phase 2**

Throughout all the phases, arousal is slightly higher in negotiations without DSS, which in the last phase reaches its high point indicating that in these negotiations, the negotiators are especially more alert/less calm in the end compared to negotiations with DSS. Also, when VienNA is used in phase 2, contract imbalance decreases throughout the phases but in the last phase it is significantly higher in negotiations without DSS.

| | DSS | | | | No DSS | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | N | Minimum | Maximum | Mean |
| ph1_CI | 11 | ,08 | 1,00 | ,7702 | 9 | ,00 | 1,00 | ,6620 |
| ph1_D1 | 11 | -,2049 | ,7182 | ,291582 | 9 | ,0658 | ,7334 | ,418433 |
| ph1_D1_Disc | 11 | ,1025 | ,3256 | ,193982 | 9 | ,0234 | ,4371 | ,199700 |
| ph1_D2 | 11 | -,3831 | ,1699 | -,140009 | 9 | -,1752 | ,4117 | ,077867 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ph1_D2_Disc | 11 | ,0835 | ,5271 | ,251036 | 9 | ,0063 | ,3686 | ,168167 |
| ph2_CI | 11 | ,26 | ,73 | ,4576 | 9 | ,30 | ,71 | ,5669 |
| ph2_D1 | 11 | -,3469 | ,3669 | -,027045 | 9 | -,4001 | ,2188 | -,039756 |
| ph2_D1_Disc | 11 | ,1005 | ,2840 | ,188609 | 9 | ,1327 | ,5258 | ,245756 |
| ph2_D2 | 11 | -,4095 | ,2375 | -,059245 | 9 | -,2741 | ,2598 | -,010156 |
| ph2_D2_Disc | 11 | ,0668 | ,3176 | ,198745 | 9 | ,1219 | ,3266 | ,223744 |
| ph3_CI | 11 | ,0367 | ,6400 | ,262348 | 9 | ,4033 | ,5200 | ,454352 |
| ph3_D1 | 11 | -,1542 | ,4210 | ,185982 | 9 | -,6257 | ,5558 | -,014033 |
| ph3_D1_Disc | 11 | ,1478 | ,3725 | ,262964 | 9 | ,0519 | ,5928 | ,176000 |
| ph3_D2 | 11 | -,5683 | ,5738 | ,036300 | 9 | -,3465 | ,6628 | ,207689 |
| ph3_D2_Disc | 11 | ,0621 | ,4298 | ,189818 | 9 | ,0603 | ,5824 | ,257456 |

**Table 30: Descriptive Statistics for *VienNA Use* in Phase 2**

### *C.6.4.3) VienNA Use in Phase 3*

In negotiations where VienNA was used in the last phase, there is indication that mean pleasure in that phase is significantly higher in negotiations without DSS even though it was consistently lower in the previous phases (see Figure 13).

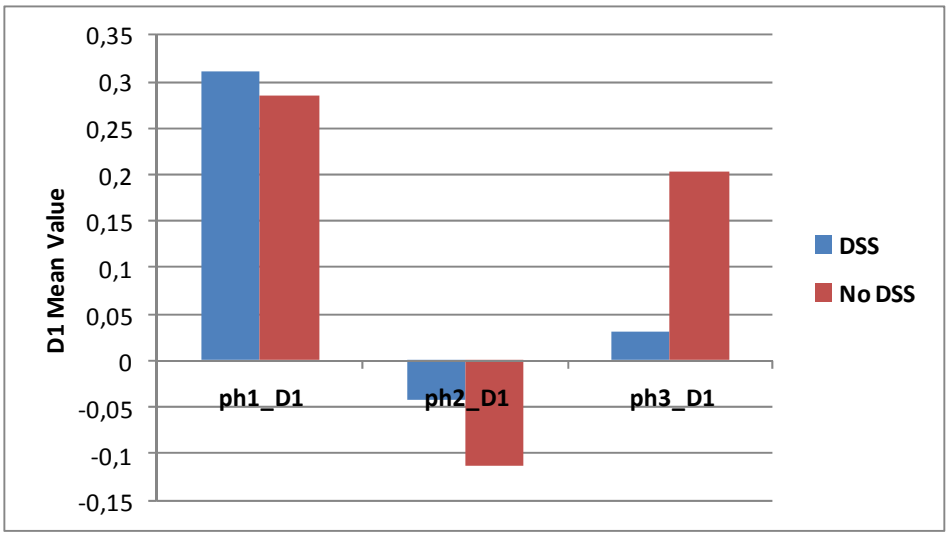


**Figure 13: Mean Values of Pleasure/Displeasure/VienNA Use in Phase 3**

According to the results, contract imbalance in phase 1 is higher in negotiations with DSS and subsequently tends to decrease. However, in negotiations without DSS, it slightly rises in the second phase and in phase 3 finally settles at a value significantly higher than in negotiations with DSS. The same effect can be observed in the case when VienNA is used in phase 2 and it is consistent with results presented in chapter C.6.2 which show that the final contract imbalance is significantly higher in negotiations without DSS.

| | DSS | | | | No DSS | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | N | Minimum | Maximum | Mean |
| ph1_CI | 13 | ,23 | ,95 | ,7428 | 11 | ,00 | 1,00 | ,5857 |
| ph1_D1 | 13 | -,3794 | ,6325 | ,310831 | 11 | -,2138 | ,8052 | ,285936 |
| ph1_D1_Disc | 13 | ,1028 | ,3236 | ,192238 | 11 | ,0186 | ,4371 | ,235845 |
| ph1_D2 | 13 | -,2103 | ,1635 | -,033931 | 11 | -,4046 | ,1821 | -,075091 |
| ph1_D2_Disc | 13 | ,0835 | ,5139 | ,241546 | 11 | ,0464 | ,2832 | ,169327 |
| ph2_CI | 13 | ,10 | ,74 | ,4540 | 11 | ,25 | ,83 | ,6140 |
| ph2_D1 | 13 | -,3689 | ,1989 | -,043069 | 11 | -,4038 | ,2188 | -,113882 |
| ph2_D1_Disc | 13 | ,1005 | ,3556 | ,234338 | 11 | ,1046 | ,2680 | ,184918 |
| ph2_D2 | 13 | -,4241 | ,3955 | -,011485 | 11 | -,4179 | ,3497 | -,023300 |
| ph2_D2_Disc | 13 | ,0888 | ,3571 | ,226069 | 11 | ,1220 | ,3035 | ,214682 |
| ph3_CI | 13 | ,0000 | ,5250 | ,242026 | 11 | ,0960 | ,5500 | ,459879 |
| ph3_D1 | 13 | -,3786 | ,3352 | ,031277 | 11 | -,1120 | ,5230 | ,203355 |
| ph3_D1_Disc | 13 | ,1478 | ,6168 | ,314477 | 11 | ,0554 | ,5928 | ,262573 |
| ph3_D2 | 13 | -,3761 | ,7063 | ,133669 | 11 | -,3723 | ,5339 | ,050045 |
| ph3_D2_Disc | 13 | ,0659 | ,3769 | ,239308 | 11 | ,0745 | ,5779 | ,283200 |

**Table 31: Descriptive Statistics for *Vienna Use* in Phase 3**

## C.7) Summary and Discussion of Results

The analysis of our negotiations produced interesting results with respect to whether decision support (DSS) was provided or not. Using whole negotiations as units of analysis, no significant results were obtained in terms of differences

between negotiations with and without DSS in contract imbalance, emotional loadings of messages and emotional similarity between negotiators on both dimensions. However the use of single phases as units of analysis generated several significant insights on the effects of decision support on emotions and contract imbalance in online negotiations.

The results imply that DSS leads to lower contract imbalance between negotiators in the last two phases of negotiations that ended in agreement. It can be argued that the DSS functions that help the negotiators understand their preferences generate more rational offers and counteroffers, which reflects upon the contract imbalance. The absence of significant results on the difference in emotional loadings of messages, emotional similarity and contract imbalance in the first phase of negotiations with and without DSS indicates that in the beginning of a negotiation, having DSS or not does not make a difference as far as emotional behavior, emotional similarity or contract imbalance are concerned. The last phase of successful negotiations is characterized by more emotional similarity in pleasure/displeasure when DSS is not provided than when it is. This DSS effect might be accounted for by the negotiators' different coping mechanisms when confronted with a complex support system. Some negotiators might feel overstrained as a result of too much information imposed by the system and thus react with displeasure, while their counterparts may feel more comfort and pleasure using the system. On the other hand, no differences between DSS and no DSS groups were found among failed negotiations. To conclude, successful negotiations with and without DSS do not appear to differ on emotions, but on similarity of emotional behavior of the participating negotiators. We consider this to be an indication of the effects of reciprocity and emotional contagion in an online negotiation setting. In successful negotiations without DSS, negotiators have very limited information, so they are more susceptible to the information and emotional expressions of their counterpart. This is when contagion sets in by “infecting” the negotiators with their counterpart’s emotions and thus causing them to be more emotionally similar. Since contagion is more likely to occur in cooperative settings (Van Kleef et al., 2010), it might explain why no emotional similarity was found in failed negotiations

The results of our Agreement vs. No Agreement comparison on the level of the whole negotiation show that successful negotiations with DSS are characterized by significantly more pleasure than failed negotiations. Furthermore, negotiators tend to be more similar in their alert/calm emotional behavior in successful as compared to failed negotiations when DSS is provided. Since we postulate that DSS provides additional information that may cause negotiators to be more alert, it could be argued that this additional contagion effect results in agreement if negotiators use DSS correctly and are excited to use it, and thus transfer these feelings to their counterpart. On the other hand, it may results in disagreement if they do not use it correctly and are distressed by it.

The last phase of failed negotiations is characterized by more displeasure than the last phase of successful negotiations, both with and without DSS. Failed negotiations are therefore significantly less pleasant, especially in the end, when negotiators reach the final phase without experiencing enough progress. This implies that, if negotiations already have a bad track record by phase 3, then DSS is not likely to help. Negotiators in failed negotiations with DSS are more emotionally similar in pleasure/displeasure in the last phase than negotiators in successful negotiations with DSS. This suggests that participants in failed negotiations with DSS reinforce each other's feelings of displeasure once they arrive to the last phase without experiencing meaningful progress. On the other hand, negotiators in successful negotiations with DSS each have different interpretations of what they have gained so far and consequently express different emotions. This is why the negotiators are less emotionally similar in pleasure/displeasure in successful negotiations than in failed negotiations with DSS.

Overall, results show that successful and failed negotiations tend to evolve similarly on both dimensions in the first two phases, during which the negotiators introduce and try to position themselves (see Phase Model Theory: Douglas, 1962; Holmes, 1992). However, there is indication that significant differences in emotional behavior surface in the last phase of the negotiation.

As previously mentioned, VienNa is a Negotiator Assistant which acts as a neutral expert and helps with several aspects of the conflict situation. In addition

to the inspection of the effects of a DSS, we investigated the influences of VienNA use in different phases of the online negotiation on the emotional dynamics. A general result pertaining to VienNA use in specific negotiation phases indicates that it is more beneficial (i.e. it results in more positive emotions - pleasure) if VienNA is used at an earlier stage than later, especially in the case when DSS is not at the disposal of the negotiating parties. Figure 14 shows the mean loadings of pleasure/displeasure when VienNA is used in different phases of negotiations without DSS. In these negotiations VienNA constitutes the only source of unbiased information available to both negotiators and therefore is extremely valuable to them. Moreover, the results also indicate that when VienNA is used in phase 1 in negotiations without DSS, there is more similarity in pleasure in the last phase than in negotiations with DSS. The same is true when VienNA is used in phase 2, which could imply that the emotional climate in the last phase of negotiations without DSS is influenced by the use of VienNA in either of the first two phases. If it is used in either of the first two phases, it is plausible to assume that VienNA has enough time to mediate and influence the negotiators' judgments, perceptions and emotions before reaching the last phase. When it is used in the beginning of a negotiation, VienNA provides a great deal of information to the negotiators, so they do not have to spend a lot of time on further information gathering, but can dedicate it to dealing with the negotiation itself.

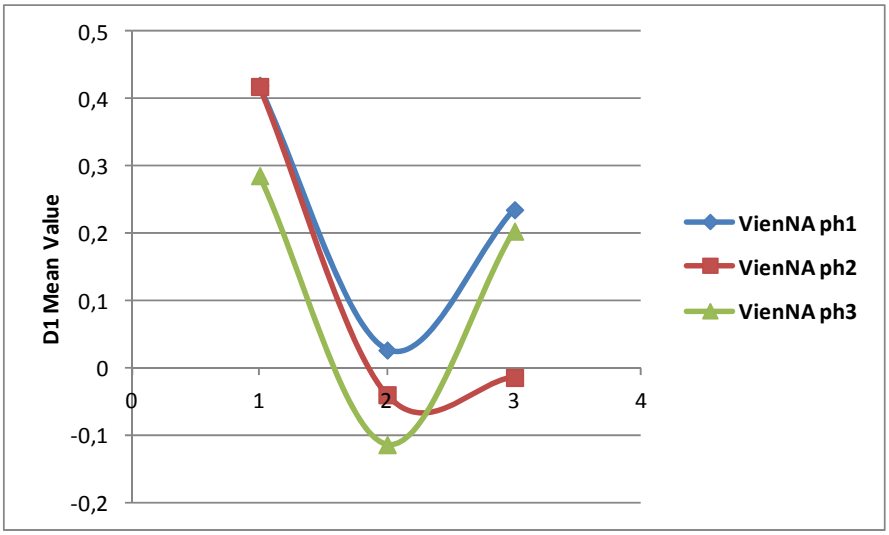


**Figure 14: Pleasure/Displeasure Evolution According to VienNA Use/No DSS**

In negotiations with DSS however, as visible in Figure 15, it is not recommended to use VienNA at the very beginning. This indicates that additional information is beneficial, but not in all situations and in the same amount, especially when there is already an important source of information that occupies the negotiators' information-processing capacity. Schoop, Jertila, & List (2003) refer to this particular problem as "over-structuring", as the system begins to control the negotiators, instead the other way around, which in turn affects their emotional behavior by causing distress and displeasure. The system should allow for flexibility and be user-friendly as not to impose too much structure onto the users (Schoop et al., 2003) and overstrain their information-processing abilities.

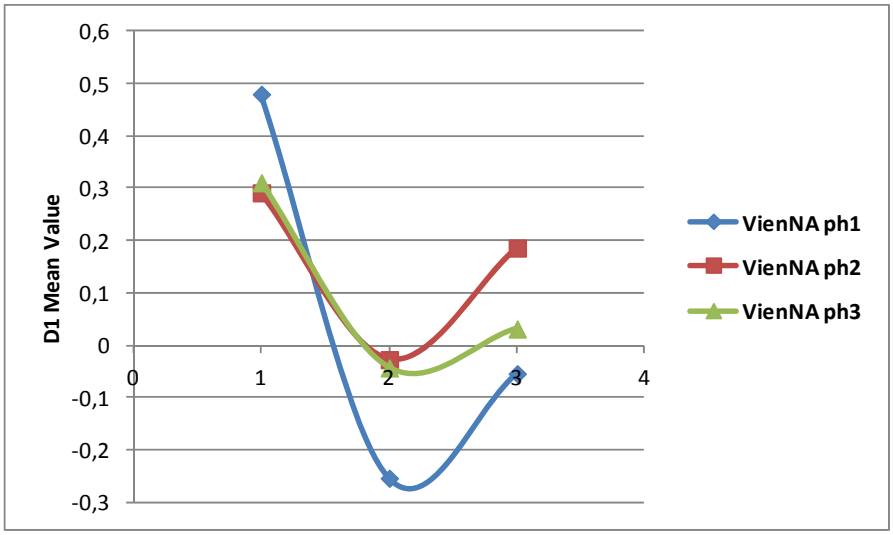


**Figure 15: Pleasure/Displeasure Evolution According to VienNA Use/DSS**

The results imply that using VienNA in the final phase in case when the negotiators do not have decision support, causes them to differ greatly in terms of offers and counteroffers, as can be observed by the levels of contract imbalance presented in Table 31. This result relates to the first finding discussed in this chapter, and implies that even when VienNA is used in negotiations without DSS, its use in the final phase is not likely to improve the contract balance between the negotiators.

# D) Conclusion

With the findings brought to light in this thesis, we contribute to negotiation research by emphasizing the importance of emotions in an online negotiation setting and by confirming the social-emotional orientation of CMC. We furthermore provide evidence for several effects of NSS on emotional dynamics from a process perspective and, supported by our findings, make suggestions for when and in which circumstances to use a Negotiator Assistant. In addition, we provide insight on the effects of DSS on the emotional behavior of online negotiation participants.

Our results show that pleasure/displeasure tends to change over time, as negotiators pass through different phases of the online negotiation. The patterns of this emotional dynamics differ upon whether an agreement was reached or not. In this respect, successful negotiations are characterized by an increase of pleasure in the final phase, whereas in failed negotiations negotiators tend to express more displeasure in the final phase because of the inability to resolve issues. However, we found no difference in emotional patterns when we compared negotiations with and without DSS. T-tests also confirmed the inexistence of effects of DSS on the emotional strength of exchanged messages. These implications notwithstanding, our results indicate that negotiations with and without DSS differ on the emotional similarity of negotiator behavior. There is indication of more similarity in the alert/calm emotional behavior of negotiators in successful as compared to failed negotiations. We therefore contribute to research by providing empirical evidence of reciprocity/emotional contagion in online negotiations and its effect on the outcome.

We argue that all negotiations evolve similarly in the beginning, regardless of the presence of DSS and their outcome. This is supported by our results, which show that the emotional effects of a support system become visible only in the last phase. Another implication of this study concerns the timing of the use of a Negotiator Assistant (in this case - VienNA). Our results support the notion of “over-structuring” of negotiation participants, by showing that too much structure

(i.e. DSS and NSS simultaneously) causes negative effects on the emotional behavior of participants. This is why we suggest that VienNA be used in the first negotiation phase only in case of negotiations without decision support.

Future research should investigate the effects of a NSS on emotional behavior of negotiators in more detail, if possible with a larger sample size of negotiating dyads. Furthermore, since the participants in negotiation experiments used for the purpose of this study did not have a close, emotional bond with the goals of the negotiation, we argue that results from a non-simulated online negotiation setting might bring forth stronger emotional effects and mediating factors.

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# II) APPENDIX

**Attachments:**

1. German Abstract
2. Curriculum Vitae

## 1) Zusammenfassung (Abstract)

Eine Vielzahl von Studien hat die allgegenwärtige Rolle von Emotionen, bei der Gestaltung der menschlichen Kognition, Verhalten (Forgas, 1998; Kelly & Barsade, 2001; Keltner & Buswell, 1997; Parkinson, 1996; Thompson, 1990), und ebenso Prozesse wie Entscheidungsfindung und Verhandlung (Allred et al., 1997; Kopelman et al., 2006; Kumar, 1997; Morris & Keltner, 2000) anerkannt. Einige weitgehend abgestützte Erkenntnisse beinhalten den Einfluss von Emotionen auf die Überzeugungen und Präferenzen des Verhandlungsführers (Barry & Fulmer, 2004; Obeidi et al., 2005), die Informationenverarbeitung (Allred et al., 1997; Hegtvedt & Killian, 1999; Daniel Shapiro, 2002), seine Urteile (Forgas, 1998; Lupton et al., 2002), innovatives Denken und Kreativität bei Problemlösungen (Barry & Oliver, 1996; Carnevale & Isen, 1986; Forgas, 1998). Zudem sind Emotionen eine konstante Quelle wertvoller Informationen über die Überzeugungen, Vorlieben und Absichten des Absenders (Barry, 2007; Druckman & Olekalns, 2007; Hegtvedt & Killian, 1999; Morris & Keltner, 2000; Pillutla & Murnighan, 1996; Scherer, 1986). Die zunehmende Bedeutung und Allgegenwärtigkeit der Informationstechnologie verursachte einen noch größeren Verlass der Menschen auf computervermittelte Kommunikation. Dies ist der Grund weshalb elektronische Verhandlungen ein zunehmend regelmäßiges Thema in wissenschaftlicher Forschungsliteratur geworden sind. Bezüglich dieser Entwicklung, sind wir in der Art und Weise interessiert, wie Emotionen in einer Online-Umgebung vermittelt und ausgedrückt werden. Die zugrunde liegende Motivation dieser Studie bezieht sich konkret auf die ungenügend erforschten Wirkungen des Decision Support Systems (DSS) und des Negotiation Support Systems (NSS) auf die emotionalen Muster, die sich während einer online Verhandlung entwickeln. Wir benutzen die Technik der multidimensionalen Skalierung um zwei emotionale Dimensionen (pleasure/displeasure und alert/calm) in Textnachrichten zu unterscheiden und zu kennzeichnen, die während eines online Verhandlungsexperimentes ausgetauscht wurden. Dies hat uns ermöglicht, bestimmte Emotionen mit den Mustern, die in der Verhandlung aufgetreten sind, und mit den Ergebnissen die

ihnen folgten zu verbinden. Das Ziel der vorliegenden Studie war es, bestimmte emotionale Dynamik, die für erfolgreiche und gescheiterte Verhandlungen mit und ohne DSS charakteristisch sind aufzudecken, und aufgrund unserer Erkenntnisse, Vorschläge bezüglich der zeitlichen Planung der Nutzung eines Verhandlungsassistenten (Negotiator Assistant) zu machen.

## 2) Curriculum Vitae

### PERSONAL INFORMATION

| | |
|---|---|
| Name: | Nina Kakeš |
| Date of Birth: | 19.09.1986 |
| Place of Birth: | Tuzla, Bosnia & Herzegovina |
| Citizenship: | Bosnia & Herzegovina, Italy |
| Contact: | ninakakes@gmail.com |

### EDUCATION

| | |
|---|---|
| Since 10/2009: | International Business Administration, *University of Vienna*, with core subjects from:<br>• International Management, and<br>• Organisation and Personnel |
| 10/2008 – 06/2009 | Two ERASMUS exchange semesters, *Vienna University of Economics and Business Administration (Wirtschaftsuniversität Wien)* |
| 10/2007 – 07/2009 | International Economics, Trade and Financial Markets, *University of Trieste (Italy),* Dottoressa in Economia Internazionale |
| 05/2005 – 06/2007 | International Economics, *University of Catania (Italy)* |

### FOREIGN LANGUAGE SKILLS

| | |
|---|---|
| English: | fluent spoken & written<br>*Cambridge University Certificate in Advanced English (CAE)* |
| Italian: | fluent spoken & written |

| | |
|---|---|
| German: | intermediate |
| | *österreichisches Sprachdiplom B2* |
| Business Russian: | conversational |

## ADDITIONAL SKILLS

| | |
|---|---|
| Computers: | ECDL - European Computer Driving License, with exams of competence in: Microsoft Word, Excel, Access, Data Processing, Power Point, Internet and Graphic and Photo Processing |
| Music: | attended and completed the Music Elementary and High School in Tuzla (B&H), instrumental program – Flute |