

How Non-Verbal Power Communication Increases Frustration and Aggressive Encounters Within the Public Task Domain

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Abstract

Despite specially designed training programmes, violence and aggression against individuals with a public task (e.g. ambulance, police, railway guard, bus drivers or security) is occurring on a daily basis. This study investigates the possible influence of non-verbal cues or behaviours on the development of aggressive feelings of the opponent in dyadic interactions. The development of aggressive behaviour is explained with the Frustration – Anger Theory of Dollard and colleagues (1939), the interpersonal power model of Schmid Mast (2010) and the approach inhibition theory of power of Keltner, Gruenfeld, and Anderson (2003). Further the importance of non-verbal communication and justice within the public tasks is explained. Non-verbal power communication and procedural justice were manipulated in an experimental study. Participants (N=92) took part in a short experiment where they read a scenario and saw an interaction (in Virtual Reality) with a police officer displaying high non-verbal power communication or neutral non-verbal power communication. This was followed by a questionnaire (answers by Likert Scale) with statements about the situation combining four constructs that could influence aggression (fairness, perceived power, frustration and procedural justice). The results showed a significant effect of non-verbal power communication on frustration levels. However, there were no significant effects found of procedural justice on frustration. Also, no mediation or moderation effects were found for perceived power. Overall this study adds information about the influence of non-verbal power communication on the development of feelings of aggression. Further research should focus on the influence of non-verbal power communication and the relation with procedural justice, on heartrate of individuals, as this could help understand the development of arousal and frustration that could cause aggressive behaviours. Exploratory research must be done analysing which non-verbal power behaviours are triggers for frustration. This could create a safer work environment by being one step ahead of dangerous situations.

Keywords: non-verbal communication, public task, aggression

Introduction

In the Netherlands violence and aggression against individuals with a public task (e.g. ambulance, police, railway guard, bus drivers or security) is a topic which keeps the government and politicians busy for years now. The occurrence of incidents on a daily basis, even despite specially designed training programs (for example: *Veilige Publieke Taak Nederland*) to prevent certain situations, raises questions. If not only the verbal controlled behaviours are important in the interactions of public workers, but if non-verbal behaviours could also be a predictor for aggressive and violent behaviours.

In 2010 approximately 65 percent of employees with a public task, had been dealing with aggression, verbal violence, intimidation, physical violence, discrimination and/or sexual harassment while executing tasks (Roeleveld & Bakker, 2010). The threat and regularly occurrence of workplace aggression is causing stress, poorer performance, psychological disorders, PTSS and burnouts among employees (Roeleveld & Bakker, 2010; Kop, Euwema, & Schaufeli, 1999).

The understanding of verbal and non-verbal cues is important when working in the public domain, as it helps predicting actions and reactions of individuals. The public worker learns to use communication cues to react according to the situation and their responsibilities.

Earlier research within the psychology domain states that human reactive behaviour is influenced by behavioural cues. Especially non-verbal behaviours play an important role influencing human reactive behaviour and helps understanding emotions and verbal behaviour (Darwin, 1872; Gelder, 2009; Briton & Hall, 1995; Schmid Mast, 2010; Langner & Keltner, 2008; Hall, Coats, & Smith LeBeau, 2005). Research of Kop, Euwema and Schaufeli (1999) explained that a negative state of mind of an individual, for example caused by negative experience, works contradictory when reacting to situations. Individuals with a negative state of mind seem to intervene in a harsher and stricter way causing equality difference, feelings of unfairness, frustration and injustice with the other individual (Roeleveld & Bakker, 2010; Lasthuizen & Paanakker, 2016; Kop, Euwema, & Schaufeli, 1999). Interestingly within the work field, co-workers notice that the same individuals often are the victim of violence and aggression (Roeleveld & Bakker, 2010; Ufkes, Giebels, Hilbrands, & Vogel, 2015).

Therefore, the aim of this research is to gain insight in the influence of non-verbal cues or behaviours on the development of negative feelings causing frustration and possible aggression with the opponent in dyadic interactions. The following question is raised: Does non-verbal communication influence perception of power and feelings of frustration and

unfairness, causing a higher tendency towards aggressive behaviors? In the theoretical framework, we try to gain insight in the motives of aggression, influence of power on aggression and the influence of procedural justice on frustration levels.

Theoretical Framework

Motives of Aggression. In regards to answering the main question of this research it is important to understand what aggression is, and which different motives of aggression can develop during dyadic interactions. Within social psychology, aggression is used to characterize hostile or violent behaviors that develop out of feelings of anger and frustration. Physical aggression results in harming another physically whereas nonphysical aggression does not involve physical but verbal expression to cause harm to another (Ufkes et al., 2015; Little, Jones, Henrich, & Hawley, 2003). Reports about the development of aggression within public tasks state that violence and aggression do not appear all of a sudden, but is a reaction to a situation or interaction in combination with the personality of the perpetrator (Roeleveld & Bakker, 2010; Ufkes et al., 2015; Shoda & Mischel, 1993; Hershcovis et al., 2007).

Within literature a distinction is made between proactive aggression and reactive aggression as reaction to a situation or interaction. Proactive aggression also known as instrumental aggression, is driven by a goal and the rewards that follow out of performing an aggressive act (e.g. a bully forcing children to give their lunch money). This aggressive behavior fits with Bandura's (1973) Social Learning model. According to this model aggression is a learned response and can be used to dominate a situation or to secure goods from others (Little, Jones, Henrich, & Hawley, 2003).

Within the field of police and other public tasks, most social interactions are with individuals without aggressive intentions on forehand, and reactions are often led by emotions (Roeleveld & Bakker, 2010; Ufkes et al., 2015). In these interactions, violence often happens out of situational or expressional aggression. The roots of reactive aggression, also known as expressive or impulsive aggression, lie within the Frustration-Anger Theory of aggression proposed by Dollard et al., (1939). The Frustration-Anger Theory states that aggression appears as an emotion to support behaviour, and to protect on personal level, when a desired goal cannot be fulfilled it causes high levels of frustration (Dollard et. al., 1939; Berkowitz, 1989). The feelings of frustration can be felt internally as heartrate increases, palms get sweaty and the individual might feel tension through the body. A high level of frustration eventually results in aggressive behaviour against a target, person or object. According to the Frustration-Anger Theory, reactive aggression is a consequence of provocation, frustration or

threat in combination with feelings of anger. The main goal of this aggressive behaviour is to react to the frustration or anger felt during the interaction, and fight to make the threat disappear. In line with this theory, research on workplace aggression shows that people with high feelings of anger, also have a higher tendency to be frustrated about situations and show more aggressive behaviour towards others (Hershcovis et. al., 2007; Little., 2003).

According to research of Roeleveld and Bakker (2010) most of the aggressive encounters within public task domain in the Netherlands are due to feelings of high frustration, irritation, confusion, unfairness in treatment and power difference. As aggression is a complex variable to measure, and frustration is the cause of aggression according to the Frustration-Anger Theory, the research further focuses on the influence of non-verbal behaviors on frustration (Dollard et. al., 1939).

Power of communication. In the public task domain, social encounters with strangers are part of the job, which increases the chance of becoming a victim of aggression or violence (Ufkes et al., 2015). Where people normally would flee from dangerous encounters, the public task worker has the responsibility to provide assistance and help. Within social interactions, power is one of the core dimensions influencing hierarchy, status and perceptions of an individual (Schmid Mast, 2010). Power in general is the perception of influence and control an individual has over another person and is often used to describe dominance, status and authority (Schmid Mast, Jonas, & Hall, 2009; Schmid Mast, 2010).

A police officer in the Netherlands has three main responsibilities. At first protecting the life of citizens, freedom and possessions. Second, to limit or end unlawful behaviors and restrict citizens. And third, ratify good behaviors to create collaborations to increase safety. To comply with these responsibilities, especially the first and second, the police is allowed, according to the Dutch law, to act in a more dominant way and use violence to get in control of situations. This law causes power difference within interactions and behavior between police and civilian. If an individual perceives its own power as higher than the other individual, especially with self-centered individuals, this increases the personal need for power. The increase of the need for power could result in exceeding the boundaries that fit with gained authority and cause inappropriate actions for example a harsher way of intervening than necessary (Chen, Lee-Chai & Bargh, 2001).

A study of interactions and power differences, showed that during dyadic interactions the more powerful individual feels more positive emotions like happiness and pride, whereas the counterpart reported more feelings of anger, fear, tension and sadness (Langner & Keltner,

2008). The perceived power increases positive self-evaluation and a more negative evaluation of the counterpart (Langner & Keltner, 2008). The first hypothesis and second hypothesis are based on the influence of power: High non-verbal power communication causes higher feelings of frustration than neutral non-verbal power communication (**H1**); High non-verbal power communication causes higher feelings of unfairness than neutral non-verbal power communication (**H2**).

Next, non-verbal power behaviors and two power models are discussed to explain the influence of communication on reactive behaviors.

Non-verbal communication. Non-verbal communication is communication based on behaviors and cues which do not include verbal content (Briton & Hall, 1995). Within expression of emotions, a lot of research focuses on the non-verbal communication based on facial expressions and facial movement (Darwin, 1872; Gelder, 2009; Briton & Hall, 1995). Non-verbal cues like a straight posture, hand gestures, speed or tone of voice, and appearance are more consciously controllable behaviors and therefore focus in this research. In the following, non-verbal communication via posture, gestures and appearance are further explained.

Posture. A posture is known as the way the body is positioned. Research of Ekman (1965) shows that posture can provide information about the degree of arousal, but not always about a specific emotion. Duclos et al. (1989), also found that specific postures can have effect on emotions, and that there is a correlation between postures and emotions with people who rely on interpersonal cues. Riskind (1984) found that negative emotions go together with negative posture, as feeling a failure causes a more slumping posture serving as self-protective function. Studies show that a static straight posture is judged more positively, a posture with lowered shoulders leaning forward is judged more negatively and closed postures elicited increase in unpleasant emotions (Schouwstra & Hoogstraten, 1995; Rossberg-Gempton & Poole, 1993; Riskind, 1984). Pride is often shown with crossing arms in front of the chest into a more closed posture (Kipp, Michael & Martin, 2009). Also, although some research disagrees (Aguinis, Simonsen & Pierce, 1998; Exline et al., 1977), people tend to avert gaze when interacting with persons with a more dominant posture (Holland, Wolf, Looser & Cuddy, 2017; Schmid Mast, 2010; Rossberg-Gempton & Poole, 1993).

Gesture. Gestures are known as movements which are used to communicate information, like showing the way by pointing to something, but also a scratch on the head

indicating thinking. Not only the movement itself but also the time, preparation, and speed of the movement seems to play a role in understanding the gestures (Lhommet & Marsella, 2014). The speed of a gesture is influenced by the speed of speech and emotional state, low arousal of emotion slows down gestures and speech, whereas high arousal can lead to faster movements. Movements that fit with an angry emotional state are larger and faster, whereas fear or sadness result in movements which are slower and less energetic. Research of Kipp, Michael, and Martin, (2009) shows that the right hand is more used when in angry emotional state and the left hand is used for more positive emotions.

Appearance. The appearance of an individual is known as the way someone or something looks and acts when becoming noticeable. For example, attractive people with a symmetric face are perceived as more positive, intelligent and healthy compared to less attractive people (Zebrowitz & Montepare, 2008). Also, status shown in clothing can influence one's gaze affection, like wearing a suit or a uniform expressing high status, people automatically look down to show submissiveness (Holland, Wolf, Looser & Cuddy, 2017; Schmid Mast, 2010).

Power and the effect on aggression. Knowing the different non-verbal behaviors individuals use to express emotions and communicate, we can look at the role of non-verbal communication triggering aggression. As discussed previously, most incidents within the public task domain develop out of reactive aggression. This form of aggression is a reaction to a situation and feelings of injustice, especially within individual-authority interactions, are important. The third and fourth hypothesis are based on this theory: Procedural injustice causes higher feelings of frustration than procedural justice (**H3**); Procedural injustice causes higher feelings of unfairness than procedural justice (**H4**).

According to the model of Schmid Mast (2010) (*figure 1*) non-verbal behaviors give insight in power and status of the interacting partner, which influences behavior. Hall et al., (2005) proposed a few non-verbal cues that high power individuals show during interactions (*see table 1*), for example, a more open body posture, standing close to the interactive partner, talk in a louder voice and interrupt often. People with less feeling of power could see high power behaviors as a threat causing fear and anger. As proposed in the Frustration-Anger Theory by Dollard and colleagues (1939) anger is an important predictor of aggressive behavior.

Table 1. *Overview of non-verbal power communication according to research of Van Hall et, al., 2005*

Non verbal power communication	
More gazing	More open posture
Lowered eyebrows	More erect posture
More nodding	More body or leg shifts
More smiling	Smaller distance between interaction partner
Less self-touching	Attractiveness
More touching of others	Older in age
More gestures	Loud voice

The Interpersonal Power Model. According to the Interpersonal Power Model of Schmid Mast (2010), verbal and nonverbal behaviors are used to gain insight in the status, personal dominance and power position of the counterpart, affecting interpersonal behavior of individuals (Schmid Mast, 2010). In this model for a dyadic interaction (*figure 1*), behavior is a reaction to experience of power of the individual (Ellyson & Dovidio, 1985; Schmid Mast, 2010). The power of an individual during interaction is based on actual power measured by status, power position in society and personality dominance. In the model competence is the extent to which the person feels competent performing the task. The model also shows that not only the own perception of power influences behavior, but perceived competence, actual power and behavior of the opponent also influences the experience of power of the individual. As said earlier power is not only perceived via verbal communication but also non-verbal behavior affects one's perception of high-power or low-power during interaction (Schmid Mast, 2010). According to the Interpersonal Power Model, the non-verbal communication of power of individual A influences the power perceived by individual B and the behavior of this individual.

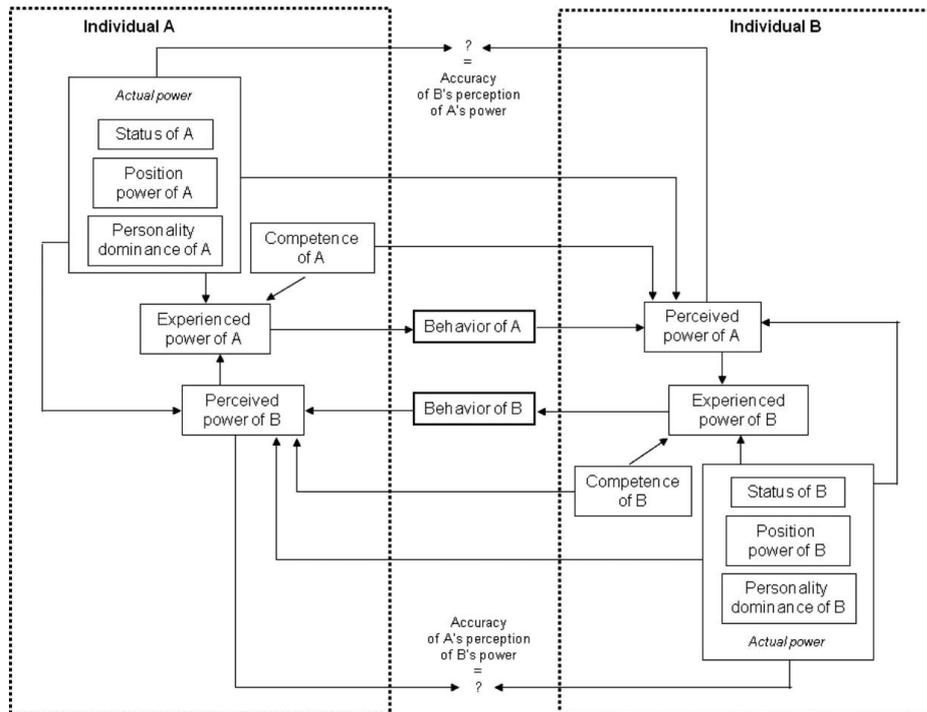


Figure 1. The Interpersonal Power and Behavior Model of Schmid Mast (2010).

The Approach Inhibition Theory of Power. The Approach Inhibition Theory of Power, Keltner, Gruenfeld, and Anderson (2003) predict behavior of individuals according to perceived feelings of higher or lower power. Individuals with perceived high power act out of a more motivational approach system, whereas individuals with perceived low power use a motivational inhibition system (Schmid Mast, 2010; Keltner, Gruenfeld, & Anderson, 2003). According to the model, people with perceived high power seek for rewards, know what can be achieved and when. People with a lack of power have less resources and access to rewards, resulting in fear for threats and punishment. And therefore, are more likely to interpret unpleasant or unexpected situations as threatening and not obedience demands of outsiders.

The Approach Inhibition Theory in combination with the Interpersonal Power and Behavior Model of Schmid Mast (2010) leads to hypothesis 5, the effect of non-verbal communication on frustration is mediated (explained) by perceived power: high power communication causes higher perceived power than neutral power communication and perception of power positively influences frustration. When non-verbal power communication is high and perceived power is low frustration levels are expected to be higher than when perceived power is high (**H5**).

In this paragraph, the influence of power differences during interactions and development of behavior was discussed. The Interpersonal Power and Behavior Model shows that behavior during interactions is continual based on the perception of status, dominance

and power. Impressions during these interactions create high or low power behavioral reactions. The Approach Inhibition Model predicts the behavior according to feelings of the perceived own power. A lack of feelings of power results in an avoidance reaction and proposes low obedience towards higher power individuals.

Injustice and aggression development. Within individual-authority interactions the equality between behaviour and fairness of punishment, treatment or reaction seems to play a big part when intervening in a sudden aggressive manner (Roeleveld & Bakker, 2010; Ufkes et al., 2015; Lasthuizen & Paanakker 2016). Especially within reactive aggression where the individual act out of frustration towards a certain situation and emotion. This paragraph gives an overview to determine in which way justice plays a role in individual-authority interactions and the role of non-verbal communication.

Injustice. Justice reflects on the degree to which people are treated fair by authorities and third parties involved in executing procedures or determining outcomes. Within research, justice is divided in distributive justice, interactional justice and procedural justice (Colquitt, Conlon, Wesson & Porter, 2001). Distributive justice focusses on the fairness of the outcome according to standards or rules. The second, interactional justice, proposed by Bies and Moag (1986) is divided by interpersonal justice and informational justice. Where interpersonal justice reflects on the degree people are treated with politeness, dignity and respect by authorities or third parties, informational justice reflects on the explanations provided on why procedures are used (Colquitt et al., 2001; Thibaut & Walker, 1975; Bies & Moag, 1986). The last, procedural justice, introduced by Thibaut and Walker (1975) focusses on the fairness of the process towards an outcome. According to Leventhal (1980) procedures are perceived as fair when (a) applied consistently, (b) free from bias, (c) based on accurate information, (d) includes a mechanism to correct inaccurate decisions, (e) conform to personal standards, ethics or moral, and last (f) the opinions of various groups affected by the decision have been taken into account.

Injustice and power communication. When the other individual sees the way of intervening as unfair, feelings of procedural injustice increase. According to the Interpersonal Power Model, (p.8/9), behaviors during interactions are based on the perception of power. When the opponent commute high power non-verbal communication in combination with an unfair procedure, the individual is expected to see this as if the opponent fully agrees with the inaccurate actions. In the same unfair procedure, in combination with low power non-verbal communication, the individual is expected to see this as if the opponent is not agreeing with

the procedure. Combining the Interpersonal Power Model and procedural injustice creates the mediation hypothesis 6, the effect of procedural injustice on frustration is mediated (explained) by perceived power: procedural injustice causes higher perceived power than procedural justice and perception of power positively influences frustration. When perceived power of the opponent is high and procedural justice is low, frustration is expected to be higher than when procedural justice is high (**H6**).

This paragraph briefly discussed three different forms of justice, namely distributive, procedural and interactional. The work pressure within public tasks and emotional state can provide a way of intervening which the other individual could see as unfair, which increases feelings of injustice. Unfairness of the process, also known as procedural injustice, is a known predictor of aggressive behaviour. According to the Interpersonal Power Model, non-verbal communication of high power could influence the perception of procedural injustice. Therefore, this study focusses on non-verbal power communication causing higher or lower feelings of procedural injustice.

Current study

The general aim of this research is to gain insight in the influence of non-verbal cues or behaviours of individuals on the development of aggressive behaviours. The following question is raised; Does non-verbal communication influences perception of power, increase feelings of frustration, and cause a higher tendency towards aggressive behaviors?

Research showed that aggression against public task workers mainly develop out of a reactive aggressive motive. Roots of reactive aggressive motives lay within the Frustration-Anger Theory, this states that frustration causes anger resulting in aggressive behaviors. Another important aspect and predictor for aggression is procedural injustice. According to the Interpersonal Power Model, non-verbal communication of high power of the opponent is expected to influence the perception of procedural injustice of an individual. On these theories, the first, second, third and fourth hypothesis of the research were based. Within social interactions power is an important dimension, resulting in the fifth and sixth hypothesis of the research. The Interpersonal Power Model and the Approach Inhibition Theory of Power, can be used to explain the influence of non-verbal communication on perceived power and power feelings on behavior within interactions.

Although there is much known about feelings and behaviours of public task workers in dyadic interactions, there is less known about the influence non-verbal power behaviours could have on the opponent. This research tries to give new insight in the influence non-

verbal power communication can have on opponents and behaviours. In figure 2 information is summarized in a conceptual model of the main concepts of this research that could influence frustration and unfairness levels (with aggression as a result) in dyadic interactions.

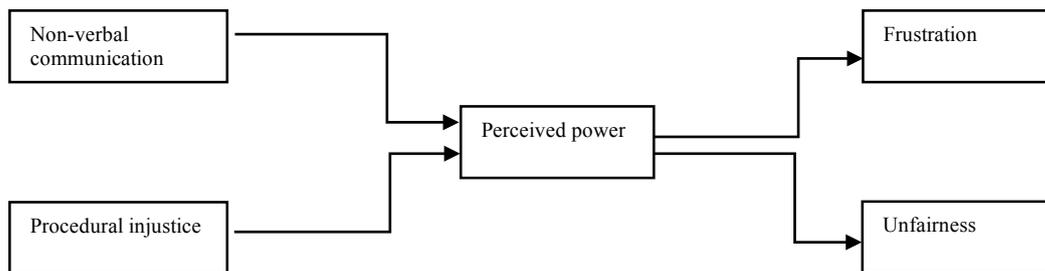


Figure 2. Conceptual Model. Overview of the main concepts that influence levels of frustration in dyadic interactions between public task worker and opponent. The power communication is the high or neutral power non-verbal communication of the public task worker. The perceived power is how powerful the individual feels within the situation. Procedural justice is if the procedure is fair according to rules and procedures.

To test the hypotheses below, an experiment was conducted combining 360-degree virtual reality film with a questionnaire about four different constructs measuring aggression. Non-verbal power communication and procedural justice were manipulated by the researcher.

As result of the research it is expected that non-verbal power communication influences feelings of power, and in procedural injustice situations results in a higher level of frustration than in a procedural justice situation, and with this increase of frustration the tendency towards aggressive behaviours increase.

H1 : High non-verbal power communication causes higher feelings of frustration than neutral non-verbal power communication.

H2 : High non-verbal power communication causes higher feelings of unfairness than neutral non-verbal power communication.

H3 : Procedural injustice causes higher feelings of frustration than procedural justice.

H4 : Procedural injustice causes higher feelings of unfairness than procedural justice.

H5 : The effect of non-verbal communication on frustration is mediated (explained) by perceived power: high power communication causes higher perceived power than neutral power communication and perception of power positively influences frustration.

H6 : The effect of procedural injustice on frustration is mediated (explained) by perceived power: procedural injustice causes higher perceived power than procedural justice and perception of power positively influences frustration.

Method

Participants

The study was conducted from mid-2018 till end-2018 and had a 2 (Non-verbal Communication High versus neutral) x 2 (Procedural justice versus injustice) between-participants design, with frustration as dependent variable. Participants were recruited by convenience sampling and voluntary response via the research participant pool of the University Twente and by promotion of the research within social networks. Participants could register via a link to make an appointment to participate in the research and could earn credits. The inclusion criteria were that participants a) were between the 18 and 35 years old, b) are in possession of a driving license and c) could read and understand English. The study was approved by the Ethics Committee of the University of Twente (application number: 18179). Participants had no prior knowledge about the exact research questions of the study. Before participation and start of the experiment individuals gave informed consent (see Appendix 1). In total 92 individuals participated in the study, with 52 of the individuals recruited via the University of Twente and 40 of the individuals recruited via social network. In table 2 the sample characteristics are summarised. The sample included 39 male participants ($M = 26.9$, $SD = 4.3$) and 53 female participants ($M = 24.8$, $SD = 4.4$). Most of the individuals were higher educated ($n = 77$, 83.7%).

More than half of the participants have ever been stopped by the police ($n = 58$, 63.0%). There was a significant strong association with gender and being stopped by the police, male participants have been stopped more often than female participants ($p = .009$) (*figure 3.1*). Only a fraction ($n = 8$, 8.7%) of the participants had a negative point of view towards police officers in general (*figure 3.2*).

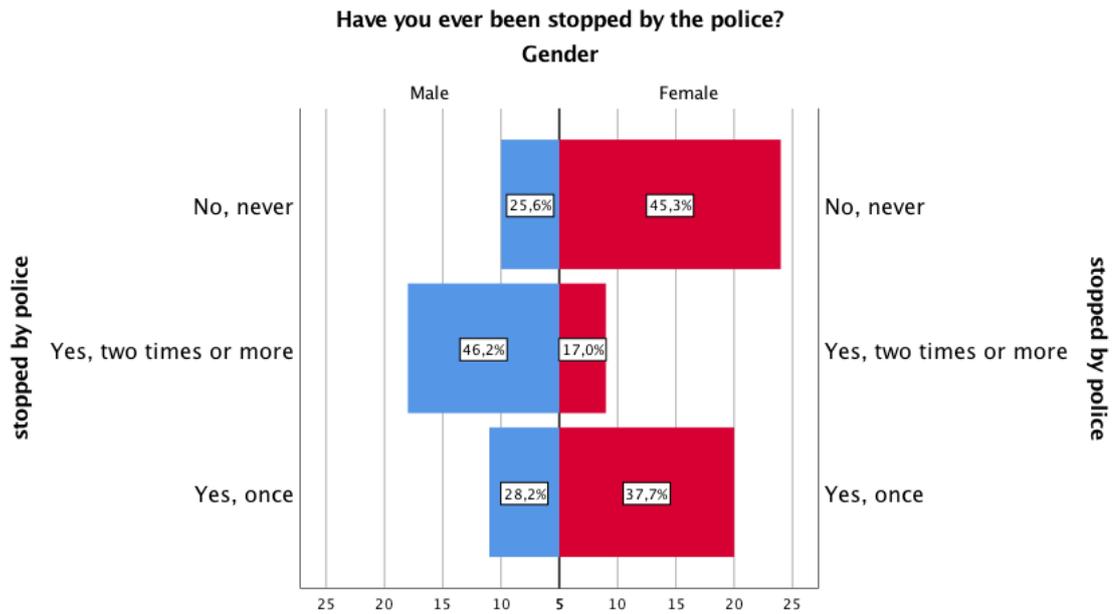


Figure 3.1. Answers on the question; have you ever been stopped by the police, divided by gender. There is a strong association between gender and ever been stopped by the police.

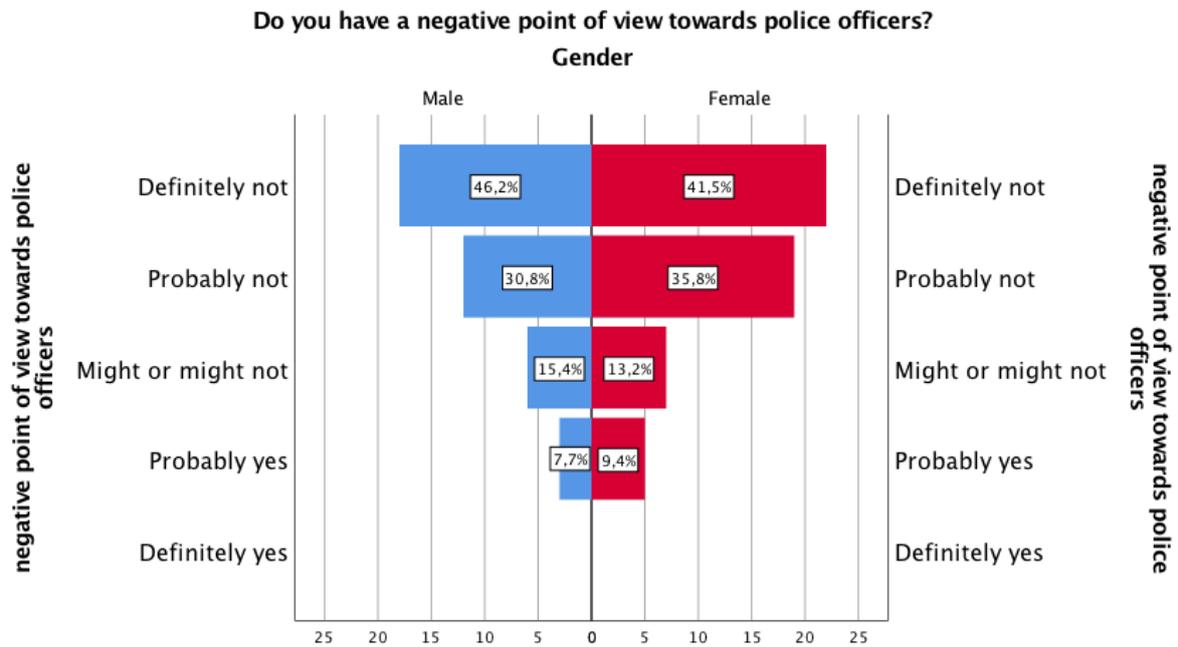


Figure 3.2 Answers on the question; do you have a negative point of view towards officers, divided by gender. Note: differences were not found to be significant.

Table 2. *Sample characteristics*

Characteristic	n	%
Gender		
Male	39	42.4
Female	53	57.6
Age		
< 20	13	14.1
21-24	27	29.3
25-29	32	34.7
>30	20	21.7
Education		
Secondary	13	14.1
Higher	77	83.7
Other	2	2.2
Have you ever been stopped by the police?		
Yes, once	31	33.7
Yes, two times or more	27	29.3
No, never	34	37.0
Do you have a negative point of view towards police officers?		
Probably yes	8	8.7
Might or might not	13	14.1
Probably not	31	33.7
Definitely not	40	43.5

Materials and Procedure

The experiment consisted of different parts, heart rate measurements, a questionnaire with demographic questions, neutral condition film clip, a scenario, a short interaction clip and a questionnaire about the different constructs. The participants were told that they could stop participation to the study at all time. The total participation time of the experiment was around 15 minutes. After participation, the participants could leave their email address to win a gift card, and were debriefed by explaining the main goal of the research. All results were analysed complete anonymous.

At the start of the experiment the participants were told that heartrate is measured with a Empatica E4 wristband. The wristband is placed on the left arm and participant is asked to

keep still during the experiment, as movements could interfere with the measurements. The heartrate of the participant is monitored via the Empatica app on a smartphone. The heartrate is measured at four different moments during the experiment, 1) after filling in demographic questions, 2) at the start of the second clip during the first sentence of the police officer, 3) at the end of the second clip, 4) while answering the last question of the questionnaire. The measurements were written down and after the end of the experiment transferred to the results of the participant in Qualtrics.

For the questionnaire (see Appendix 2) Qualtrics, an online questionnaire tool was used (Qualtrics.com, license by University of Twente). In the first part of the research the participant is asked to fill in demographics like, age, educational level and gender.

For the different conditions, three short clips were made using a 360-degree film camera (Samsung gear 360 SM-R210). Virtual reality (VR) glasses and a smart phone (Samsung galaxy S6 and Samsung gear VR) were used to show participants the different clips. The first clip consists of only 360-degree footage of the participant standing next to a car with open door (*figure 4.1*). All participants saw the neutral clip to experience the feeling of wearing VR-glasses and got instructions on how to stop the clip if feeling dizzy or nauseous.



Figure 4.1. Screenshot of the neutral 360-degree film condition, that all participants saw to experience the feel of VR-glasses.

After answering demographic questions and seeing the first clip participants were randomly assigned by Qualtrics to a scenario which included a procedural injustice or procedural justice situation. The participants assigned to the procedural injustice condition had to read a scenario where the individual is stopped by the police without doing something wrong.

...as you approach the crossing, the traffic light turns from green to orange. You decide to step on the gas, and cross the intersection. A few meters further on, the car you've crossed earlier catches up with you. In your rearview mirror, you see a red 'Stop Police' sign. You pull over and stop the car to talk to the police. (see Appendix 3)

The participants assigned to the procedural justice condition had to read a scenario where the individual is stopped by the police knowing that he/she did something wrong.

...as you approach the crossing, the traffic light turns from orange to red. You decide to step on the gas, and cross the intersection. A few meters further on, the car you've crossed earlier catches up with you. In your rearview mirror, you see a red 'Stop Police' sign. You pull over and stop the car to talk to the police. (see Appendix 3)

After reading the scenario, participants were asked if they read and understand the scenario before continuing to the second clip with the police interaction.

The second clip consists of 360-degree footage of the participant standing next to a car with open door, but standing in front of a police officer who is trying to interact. The police officer wears modest police clothing, as traffic police if often undercover. The actor playing the officer was chosen based on his neutral appearance. The participants were randomly assigned and saw one of the clips with the police displaying high power non-verbal communication or neutral non-verbal communication. The verbal communication is pre-scripted and for both conditions equal, the non-verbal communication is different for both conditions and changes and movements in non-verbal communication were scripted (*table 3*) (see Appendix 4 for script). See figure 4.2, 4.3 and 4.4 for screenshot comparison between the non-verbal power communications in the high and neutral condition.

Table 3. *Non-verbal communication police officer showing during interaction per scripted change of behaviours.*

scene	High power	Neutral power
1	Compelling hard tone of voice Eye contact Wide leg stand Back straight Shoulders low	Soft tone of voice Eye contact Normal leg stand Back relaxed
2	Crossing arms Unbroken Eye contact Wide leg stand Back straight Shoulders low	Pointing past offender Unbroken Eye contact Normal leg stand Back relaxed
3	Grabbing the ID card aggressively One step forward and closer to the offender Wide leg stand Back straight Looking the offender in the eye	Takes ID card from offender neutral One step forward and closer to the offender Normal leg stand Back relaxed Looking the offender in the eye
4	Scanning the body of offender from top till bottom Looking at the ID card Wide leg stand Back straight	Scans the body from bottom till top Looking at the ID card Normal leg stand Back relaxed
5	Hard tone of voice Fast arm movements close towards offender Wide leg stand Back straight	Soft tone of voice Slow arm movements towards offender Normal leg stand Back relaxed
6	Writes something on note block Looks up one second without moving but keeps head tilted downwards Wide leg stand	Writes something on note block Normal leg stand
7	Hands move to sides of body on the hips Wide leg stand Head/chin tilted a bit upwards Back straight In the end Looking away from offender	Hands move neutral to side of the body Normal leg stand Head neutral Back relaxed Keep looking at the offender in the end



Figure 4.2. Comparison between the high-power clip condition (left) versus the neutral power clip condition (right) (*scene 1*). The main difference shown, leg stand (wide vs. close) and the distance between individual and officer.



Figure 4.3. Comparison between the high-power clip condition (left) versus the neutral power clip condition (right) (*scene 2*). The main difference shown, posture (closed vs. open) and leg stand (wide vs. close).



Figure 4.4. Comparison between the high-power condition (left) versus the neutral power condition (right) (*scene 7*). The main difference shown is no eye contact versus eye contact and posture.

After seeing the second clip participants were asked to answer 22 statements about the experience with the officer. The participants answers could range from fully disagree till fully agree based on a 5-point Likert scale, with 1 = strongly agree and 5 = strongly disagree.

As aggression is a complex construct to measure, it was chosen to research five constructs known as possible influences of aggression; perceived power, procedural justice, fairness and frustration. The statements of frustration and unfairness and justice were formed based on research of Colquitt & Rodell (2015) and the statements of power on research of Anderson & Berdahl (2002). The answers of the negative formulated questions in the questionnaire (Q1, Q2, Q3, Q5, Q9, Q10, Q11, Q15, Q16) were recoded into positive. The four different constructs are tested on reliability with Chronbach's Alpha, the total alpha of the questionnaire was 0.8 (alpha of fairness, 0.8; justice, 0.6; power, 0.6; frustration, 0.6). No items were deleted from the questionnaire before analysis.

Analysis

The data from Qualtrics was imported and analysed using SPSS 25. First the means of the constructs were recalculated into new variables. The number of participants, means, standard deviations and total scores were calculated to discover the distribution and difference in scores between the four experiment groups and male and female participants.

The first analysis was based on a 2 (Non-verbal Power Communication; High vs. Neutral) x 2 (Procedural Injustice vs. Justice) between-participants design. Two ANOVA's were used to gain insight in the main effects and interaction effects of non-verbal communication and procedural justice, with total frustration score and total unfairness score used as dependent variable.

For the mediation analysis, the PROCESS macro by Hayes (2017) was used for analysis with total frustration score as dependent variable, non-verbal power communication and procedural injustice as independent variables and perceived power as mediator. Regression analysis was used to gain insight in the mediator moderator possibilities of the conceptual model with perceived power as possible moderator and frustration as dependent variable.

The additional heartrate measurements were analysed with a 2 (Non-verbal Power Communication; High vs. Neutral) x 2 (Procedural Injustice vs. Justice) x 4 (Time of Heartrate Measurement) design. For this analysis, repeated measure ANOVA was used with heartrate as dependent variable. The heartrates of the different groups were compared to gain

insight in the possible differences between the heart rate of the participants measured on four different times due to non-verbal communication or procedural justice.

Results

Self-report measures

The number of participants, means, standard deviations per experiment group per measure are displayed in table 4. There was no significant difference found between the scores based on gender of the participants. The higher the overall score per construct the more the individual disagreed to the item statements. For example, a high score on frustration meaning, participants felt more frustrated and a high score on power indicated that participant felt less powerful to object to the officer and showing their opinion. There was no significant difference found between the scores of male and female participants and mean scores of constructs.

Table 4. *The experiment groups and the means and standard deviations of the measured constructs.*

Group	Construct	n	Fairness		Justice		Power		Frustration	
			M	SD	M	SD	M	SD	M	SD
Non-verbal high power communication	Justice	35	2.25	0.72	2.59	0.73	3.30	0.65	2.43	0.56
	Injustice	16	2.20	0.67	2.50	0.52	3.38	0.50	2.33	0.64
Non-verbal neutral power communication	Justice	10	2.05	0.74	2.25	0.62	3.12	0.72	2.08	0.66
	Injustice	31	2.05	0.74	2.25	0.62	3.12	0.72	2.08	0.68
Total		92	2.20	0.73	2.42	0.68	3.22	0.67	2.25	0.65

Note. Nothing in this table reached significance.

Effects of frustration and unfairness

The expectation of the study is that high power non-verbal communication causes higher feelings of frustration, than when non-verbal power communication is neutral (H1). Further expectation is that procedural injustice would increase frustration score (H2).

Scores were analysed with a 2 (Non-Verbal Power Communication: High vs. Neutral) x 2 (Procedural Justice vs. Injustice) ANOVA with the total score of frustration as dependent variable. The analysis showed a significant main effect of the non-verbal power communication shown to participants (high or neutral) on total frustration score, $F(1, 92) = 5.76, p = .019$. The participants in the high power non-verbal communication group scored significantly higher on frustration ($M = 2.40, SD = 0.58$), compared to participants in the

neutral power non-verbal communication group ($M = 2.05$, $SD = 0.68$), supporting hypothesis 1.

There was no main effect found of the influence of procedural justice on total frustration score of participants, $F(1, 92) = .002$, $p = .961$. No interaction effect was found between non-verbal communication and procedural justice on frustration, $F(1, 92) = .611$, $p = .436$, therefore, results do not support hypothesis 3.

Another expectation of the study is that high power non-verbal communication causes higher feelings of unfairness, than when non-verbal power communication is neutral (H2). Further expectation is that procedural injustice would influence unfairness score positively (H4). Scores were analysed with a 2 (Non-Verbal Power Communication: High vs. Neutral) x 2 (Procedural Justice vs. Injustice) ANOVA with total score of unfairness as dependent variable. The analysis showed no significant main effect of the non-verbal power communication showed (high or neutral) on total unfairness score, $F(1, 92) = .024$, $p = .876$, not supporting hypothesis 2. The participants in the high non-verbal communication group did not score higher on unfairness, compared to participants in the neutral non-verbal communication group. There was no main effect found of the influence of procedural justice on fairness score of participants, $F(1, 92) = 1.84$, $p = .178$. No significant difference between frustration score of the group that experienced the fair procedural situation compared to the unfair procedural situation was found, not supporting hypothesis 4. No interaction effect occurred between non-verbal communication and procedural justice on fairness, $F(1, 92) = 1.12$, $p = .293$.

Mediation of perceived power

The relation between non-verbal communication and frustration score of participants was expected to be explained via perceived power (H5). Perceived power reflects on the perception of the participant of one's own power to react according to the situation, a high total score indicates high perception and confidence of the individual to react to the situation. The results, shown in figure 5, did not indicate that non-verbal communication was a significant predictor of perceived power ($b = .223$, $SE = .139$, $p > .05$), not supporting hypothesis 5.

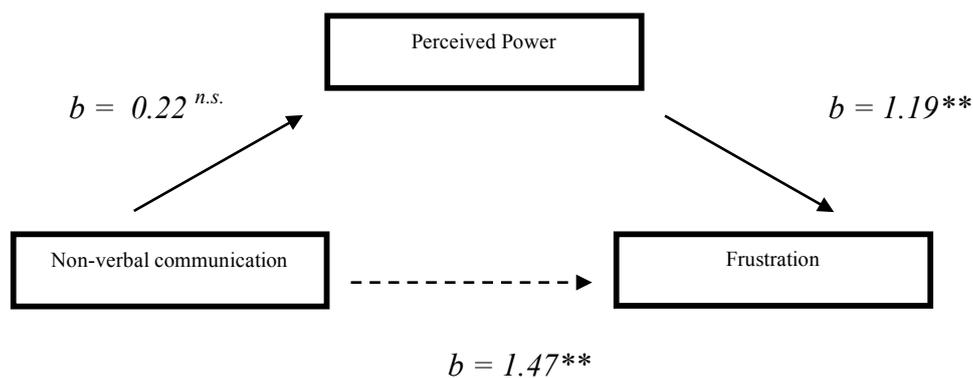


Figure 5. Non-verbal communication as predictor for frustration mediated by perceived power. Reported measures are unstandardized coefficients. $**p < .05$. $n.s.$ = not significant.

Another expectation of the study was that procedural justice was a predictor of perceived power and perceived power mediated higher frustration scores (H6). Results shown in figure 6, did not indicate that justice was a significant predictor of perceived power ($b = -.031$, $SE = .140$, $p > .05$), not supporting hypothesis 6.

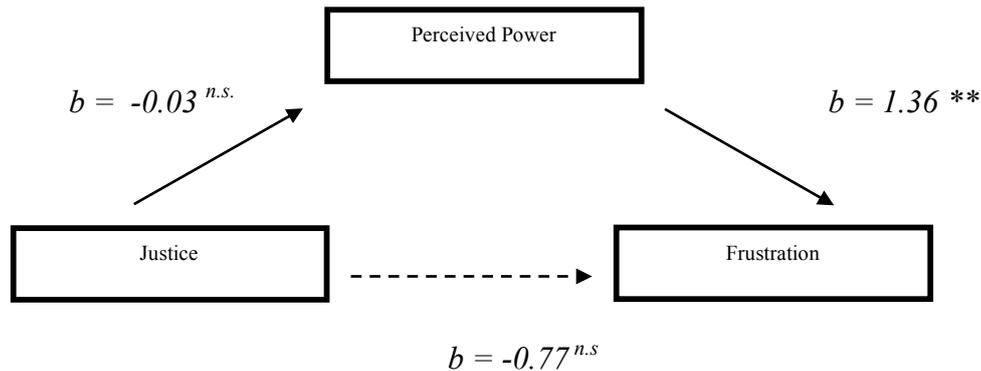


Figure 6. Justice as predictor for frustration mediated by perceived power. Reported measures are unstandardized coefficients. $**p < .05$. $n.s.$ = not significant.

Additional analysis

Moderator analysis. The mediation analysis with PROCESS (Hayes, 2017) showed no significant mediation effect between non-verbal communication and perceived power, nor between justice and perceived power. The analysis did show a significant effect of perceived power on total frustration score (see figure 5 and 6). Therefore, additional regression analysis was used to gain insight in the possible moderation/mediation effect of perceived power on

total frustration score. See figure 7 for the routes and unstandardized coefficients of the effects.

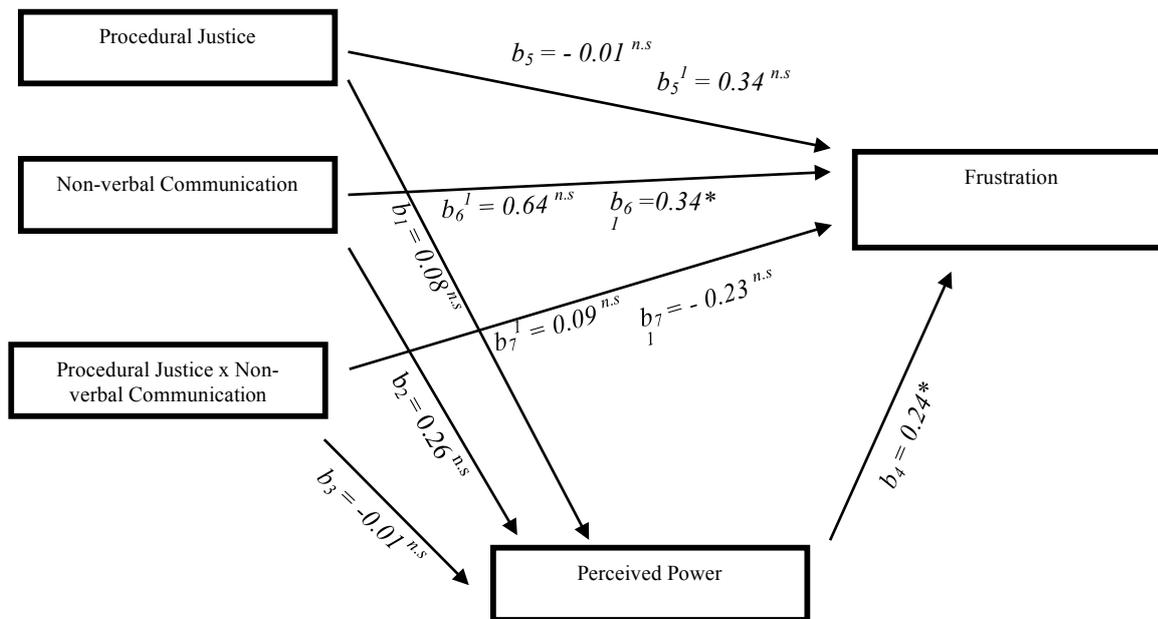


Figure 7. The three different routes of effects with procedural justice, non-verbal communication and procedural justice*non-verbal communication as predictor for frustration and perceived power as moderator for frustration scores. Reported measures are unstandardized coefficients, **p < .05, ^{n.s}=not significant.

The three effects on frustration without perceived power in the model (b_5, b_6, b_7), show only for (b_6) non-verbal communication a significant main effect on total frustration score. This is in line with previous mediation results (see figure 5). The effect of perceived power on total frustration score (b_4) is shown significant. However, the routes including perceived power in the model as moderator (b_1, b_4, b_5^1 ; b_2, b_4, b_6^1 ; b_3, b_4, b_7^1) did not indicate a significant moderation effect of perceived power on the total score of frustration.

Multiple comparison of heartrate measurements. During the experiment heartrate was measured on four different points during the experiment, (1) after reading the scenario, (2) during the first sentence of the police officer, (3) after the last sentence of the police officer and (4) at the end after filling in the questionnaire. The measurements are analysed with a 2 (Non-Verbal Power Communication: High vs. Neutral) x 2 (Procedural Justice vs. Injustice) x 4 (Time: after scenario¹, during first sentence², after last sentence³, end of questionnaire⁴) mixed design with non-verbal power communication and justice as between participants independent variables and time as within dependent variable. It was expected that

the heartrate of participants increased during the experiment as frustration increased. The sphericity assumption is met for the data ($p > 0.05$).

The analysis showed a significantly strong main effect of time on heartrate, $F(3, 225) = 15.8, p < 0.001$. In figure 8 this effect of time on heartrate is shown. During the experiment, the heartrate of the participants seems to increase from the first measurement ($M = 77.9, SD = 1.87$) till the third measurement ($M = 82.6, SD = 1.96$) and decrease in the end of the experiment at measurement four ($M = 75.1, SD = 1.63$). Further analysis showed a significant increase between time: after scenario¹ and during first sentence² ($M = 2.59, SD = 1.00, p = 0.01$), and a significant decrease between time: after last sentence³ and end of questionnaire⁴ ($M = -7.49, SD = 1.19, p < 0.001$). These results are in line with the expectation of the development of frustration causing the heartrate to increase during the experiment. No significant effects were found of time on non-verbal communication, $F(3, 225) = .179, p = .910$, or of time on justice, $F(3, 225) = .996, p = .395$.

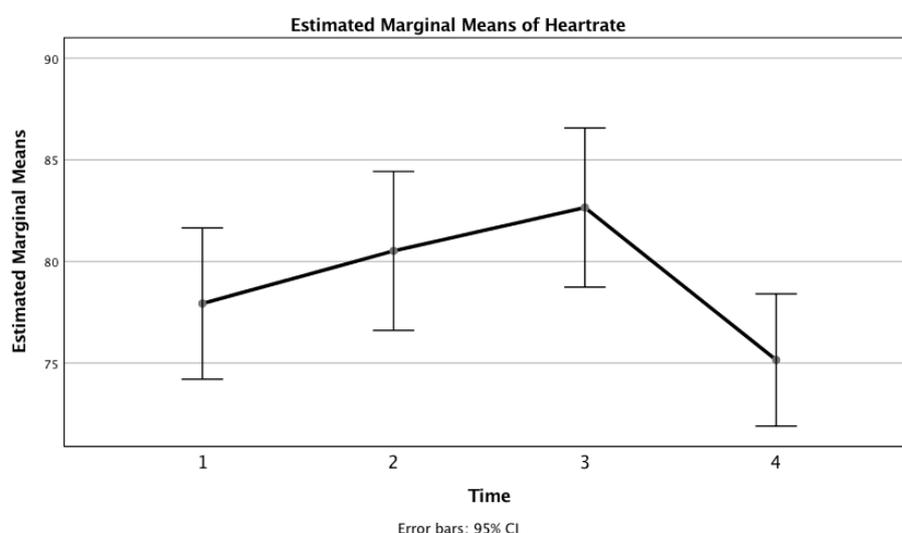


Figure 8. Showing the mean heartrate measured at four different times during the experiment after scenario¹, during first sentence², after last sentence³, end of questionnaire⁴.

Further analysis shows that there was no significant effect found between time and non-verbal neutral power communication $F(1, 75) = .328, p = .568$, or between time and injustice $F(1, 75) = .523, p = .472$. There results do show a significant effect of time and non-verbal high power communication and justice group $F(1, 75) = 4.67, p < 0.05$, and between time and justice and non-verbal power communication group $F(1, 75) = 3.85, p < 0.05$. Results (see figure 9) show that participants shown the high power non-verbal communication clip in combination with an injustice situation ($M = 82.5, SD = 2.35$) significantly differ in mean heartrate compared to participants in the procedural justice situation ($M = 73.3, SD =$

3.56). The heartrate of participants in the high power non-verbal communication group is in the procedural justice situation significantly lower than the heartrate of participants in the injustice situation ($M = -9.22$, $SD = 4.27$, $p = .034$). This is supporting hypothesis 1, hypothesis 3 and hypothesis 5, showing an effect of procedural justice and non-verbal power communication on frustration.

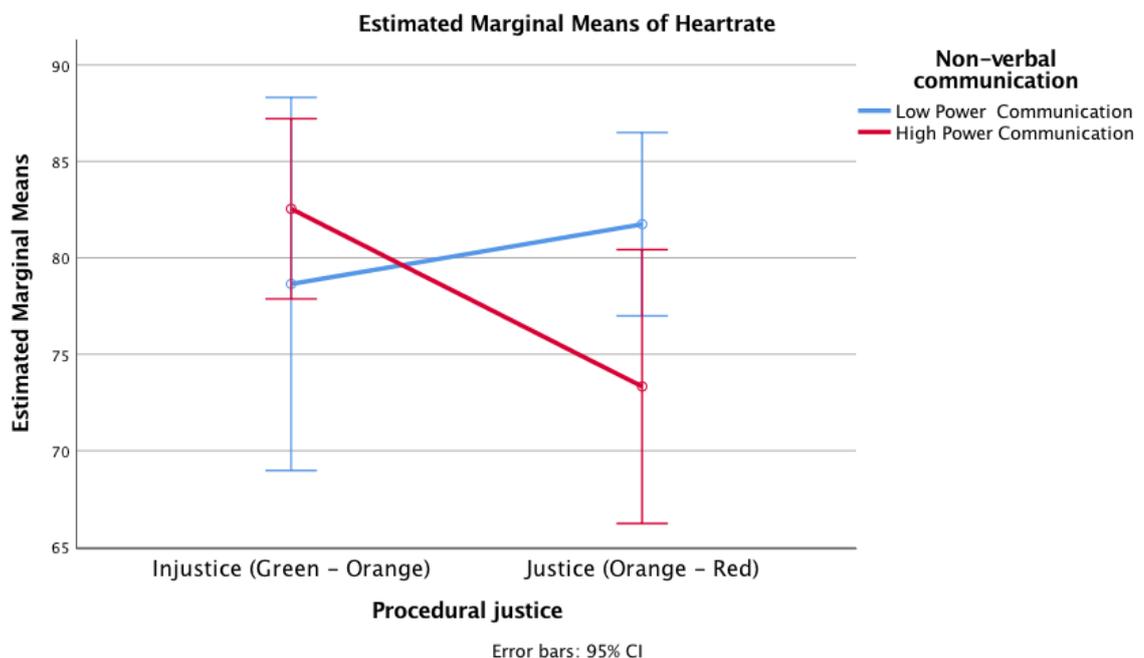


Figure 9. The influence of non-verbal communication and procedural justice on mean heartrate of participants during the experiment plotted with 95% confidence interval.

Discussion

The aim of the study was to gain insight in the influence of non-verbal cues or behaviours on the development of aggressive feelings of individuals in dyadic interactions in the public work field. The goal of the experiment was to research if non-verbal communication and justice could influence perception of power and increase the frustration experienced of the individual. The variables procedural justice and non-verbal power communication were manipulated during the research creating different test groups. The data collected by questionnaire provides information about different constructs and their influence on total frustration levels of participants. Overall the findings of this study provide additional information and new insight of non-verbal communication and the development of aggression towards individuals working in the public domain. As most of the test results of this study did

not support expectations or the discussed theory, limitations of the research are discussed next.

As the results are influenced by the implementation and construction of the experiment, the limitations of the design and method of the study are discussed first. For the experiment, a 2 x 2 design (four groups) was used with a total of 92 participants. For reliable result, each group should contain of a minimal of 25 participants. The participants have not been evenly distributed between groups due to a design fault in the Qualtrics questionnaire, causing skewed distribution. There was no equal distribution of male and female participants, due to limited availability of male participants. The skewed distribution was ignored when analysing results.

Overall the experiment took around 15 minutes in total, in which the participant sat on a chair filling in the questionnaire and would stand up two times to see the VR-clip. The movements could have influenced the measured heartrate of the participant. Also, the measurements were taken based on sound rather than exact time frames of the clip, as it was not possible to actually see what the participant saw due to technical limitations. The exact time of the heartrate measurements could differ, which could have caused heartrate differences. It would be interesting to see how the individual's heartrate changes due to the exact changes in the non-verbal communication of the police officer in the clip. As this could give more insight in the influence of certain non-verbal communicative movements and feelings of frustration.

Working with a filmed 360-degree clip rather than a real virtual reality setting, could have influenced results. The filmed clip was quite boxy which made it difficult to notice small changes in the non-verbal behaviours of the police officer like more relaxed shoulders. Afterwards participants shared that it felt as a real situation but it felt a bit strange as it was not possible to interact and react to the officer. In follow-up research, it would be interesting to see if it is possible to change the setting to a real virtual reality setting with possibilities to interact.

The questionnaire measured four constructs based on existing questionnaires. It was decided that there would only be five questions per construct as the questionnaire would otherwise take too much time which would limit the number of participants that could participate within the time span of the research. However, analysing the items and constructs, the alphas were too low. It would have been better to include more questions to the questionnaire, and test this prior to the research to get a better cohesion and reliability.

Next, we discuss the limitation of the results and try to explain found effects combined with new and earlier discussed theory.

First, it was expected that non-verbal power communication influences frustration levels. The analysis of results shows that there was a significant difference between the high non-verbal communication group and the neutral non-verbal communication group and frustration scores. Non-verbal power communication is causing higher feelings of frustration than neutral non-verbal power communication. Supporting hypothesis 1; High non-verbal power communication causes higher feelings of frustration than neutral non-verbal power communication. This is supporting the research about the importance and influence of non-verbal power communication of Langner & Keltner (2008).

Second, the research did not indicate any significant effects of perceived power mediating or moderating frustration score as shown in the conceptual model (*figure 2*) (rejecting hypothesis 5 and 6) and does not support the Approach Inhibition Theory of Power, Keltner, Gruenfeld, and Anderson (2003). There was no significant difference found in perceived power between the high and neutral non-verbal power group. If using perceived power as manipulation check, finding no difference between the two conditions (high vs. neutral) could mean that perceived power was not measured correctly, or the impact of the non-verbal communication is not caused by perceived power but an 'unknown' variable. Aguinis, Simonsen & Pierce (1998), discovered that there are five different sources of power; reward power, coercive power, legitimate power, referent power and expert power. The combination of those five sources gives information about the ability of an officer to influence a target (Aguinis, Simonsen & Pierce, 1998). Further research should take these different forms of power into account when measuring perceived power, this could give new insight in the influence of specific non-verbal power communication styles and specific factors of perceived power.

Third, the research did not indicate any significant effects of procedural injustice on frustration score, neither did unfairness result in significant effects (rejecting hypothesis 2, 3 and 4). Not finding any significant results for the construct of unfairness and procedural injustice, could be due to the injustice scenario formulated incorrect causing not enough negative feelings to be measured correctly. According to research of Gau and Brunson (2010) on policing and procedural justice in the USA, procedural injustice is very important in police interactions. Policing in a professional and respectful way towards the individual, helps reducing negative image of the police following the law (Tyler & Wakslak, 2004; Skogan & Frydl, 2004; Skonan & Meares, 2004). Being treated fairly causes greater satisfaction with

police after interaction (Tyler & Folger, 1980). High procedural injustice policing causes a more negative state of mind and feelings of distrust among individuals. Also, random police encounters like frisks and traffic checks, could cause shame, embarrassment, anger and could violate the personal integrity of the interactive individual (Gau & Brunson, 2010). Further exploration on the influence of police interaction on personal integrity could give new insight in the occurrence of frustration and negative behaviours. This new information could be useful designing a more optimal scenario for testing procedural justice, unfairness and frustration in Dutch police interactions.

Unexpected the additional analysis of the heartrate measures showed that the heartrate of the high non-verbal power communication group in the procedural injustice situation was significantly higher compared to the heartrate of participants in the procedural justice situation. The difference of heartrate between the procedural justice and procedural injustice group in the neutral non-verbal power condition did not indicate significant difference. This indicates that when police would interact non-verbally with high power, when the individual is stopped while knowing he/she did not do anything wrong (procedural injustice), the heartrate of the individual increases. But when the individual is stopped knowing he/she did do something wrong (procedural justice) with the police interact non-verbally with high power the heartrate would be lower causing less arousal. This is in line with the expectations of behaviour based on the perception of power in the Interpersonal Power Model of Schmid Mast (2010). The increase of heartrate could cause a more aroused state of mind which is a known trigger for aggressive behaviours as discussed in the Frustration-Anger Theory (Dollard et. al., 1939; Berkowitz, 1989). This effect found supports the research of

Unfortunately, not much research was done yet in this field specifically focussed on aggression experienced from the perspective of citizen interacting with public task workers.

Overall this study adds information about the influence of non-verbal power communication on the development of feelings of aggression. Further research should focus on the influence of non-verbal power communication and the relation with procedural justice, on heartrate of individuals, as this could help understand the development of arousal and frustration that could cause aggressive behaviours. Also, exploratory research must be done analysing which non-verbal power behaviours are triggers for frustration and if those behaviours are displayed by public task workers. Eventually understanding non-verbal power communication could help public workers analyse their own non-verbal power behaviours and use those behaviours right according to the situation. This could create a safer work environment by being one step ahead of dangerous situations in the public domain.

References

- Aguinis, H., Simonsen, M. M., & Pierce, A. C. (1998). Effects of Nonverbal Behavior on Perceptions of Power Bases, *The Journal of Social Psychology*, 138:4, 455-469, doi: [10.1080/00224549809600400](https://doi.org/10.1080/00224549809600400)
- Anderson, C., & Berdahl, J. L. (2002). The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality*
- Bandura, A. (1973). *Aggression: A Social Learning Analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Baron, R. A., & Richardson, D. R. (1994). *Human aggression*. New York: Plenum Press.
- Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, 106(1), 59-73.
<http://dx.doi.org/10.1037/0033-2909.106.1.59>
- Briton, N. J., & Hall, J. A. (1995). Beliefs about female and male nonverbal communication. *Sex Roles*, 32(1-2), 79-90. <http://dx.doi.org/10.1007/BF01544758>
- Bies, R. J., & Moag, J. F. (1986). Interactional justice: Communication criteria of fairness. In R. J. Lewicki, B. H. Sheppard, & M. H. Bazerman (Eds.), *Research on negotiations in organizations* (Vol. 1, pp. 43-55). Greenwich, CT: JAI Press.
- Chen, S., Lee-Chai, A. Y., & Bargh, J. A. (2001). Relationship orientation as a moderator of the effects of social power. *Journal of Personality and Social Psychology*, 80, 173-187.
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. L. H., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86(3), 425-445. <http://dx.doi.org/10.1037/0021-9010.86.3.425>
- Colquitt, J. A., & Rodell, J. B. (2015). Measuring justice and fairness. In R. S. Cropanzano & M. L. Ambrose (Eds.), *Oxford library of psychology. The Oxford handbook of justice in the workplace* (pp. 187-202). New York, NY, US: Oxford University Press.
- Darwin, C. (1872). *The Expression of the Emotions in Man and Animals*. USA: Oxford University Press.
- De Gelder, B. (2009). "Why Bodies? Twelve Reasons for Including Bodily Expressions in Affective Neuroscience." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364 (1535) (December 12): 3475-3484. doi:10.1098/rstb.2009.0190.
- Dollard, J., Doob, L., Miller, N., Mowrer, O., & Sears, R. (1939). *Frustration and aggression*. New Haven, CT: Yale University Press.

- Duclos, S. E., Laird, J. D., Schneider, E., Sexter, M., Stern, L., & Van Lighten, O. (1989). Emotion-specific effects of facial expressions and postures on emotional experience. *Journal of Personality and Social Psychology*, 57(1), 100-108. <http://dx.doi.org/10.1037/0022-3514.57.1.100>
- Ekman, P. (1965). "Differential Communication of Affect by Head and Body Cues." *Journal of Personality and Social Psychology* 2 (5): 726.
- Ellyson, S. L., & Dovidio, J. F. (1985). Power, dominance, and nonverbal behaviour: Basic concepts and issues. In S. L. Ellyson & J. F. Dovidio (Eds.), *Power, dominance, and nonverbal behaviour* (pp. 1-27). New York: Springer.
- Exline, R. V., Ellyson, S. L., & Long, B. (1975). Visual behavior as an aspect of power role relationships. In P. Pliner, L. kames, & T. Alloway (Eds.), *Advances in the study of communication and affect* (Vol. 2, pp. 21-52). New York:Plenum
- Gau, J. M., & Brunson, R. K. (2010) Procedural Justice and Order Maintenance Policing: A Study of Inner-City Young Men's Perceptions of Police Legitimacy, Justice Quarterly, 27:2, 255-279, DOI: [10.1080/07418820902763889](https://doi.org/10.1080/07418820902763889)
- Hall, J. A., Coats, E. J., & Smith LeBeau, L. (2005). Nonverbal behaviour and the vertical dimension of social relations: A meta-analysis. *Psychological Bulletin*, 131, 898- 924.
- Hayes, A. F. (2017). *Methodology in the social sciences. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY, US: Guilford Press.
- Hershcovis, M. S., Turner, N., Barling, J., Arnold, K. A., Dupré, K. E., Inness, M., . . . Sivanathan, N. (2007). Predicting workplace aggression: A meta-analysis. *Journal of Applied Psychology*, 92(1), 228-238. <http://dx.doi.org/10.1037/0021-9010.92.1.228>
- Holland, E., Wolf, E. B., Looser, C., & Cuddy, A. (2017). Visual attention to powerful postures: People avert their gaze from nonverbal dominance displays. *Journal of Experimental Social Psychology*, 68, 60-67. <http://dx.doi.org/10.1016/j.jesp.2016.05.001>
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, 110, 265-284.
- Kipp, Michael, & J.-C. Martin. (2009). "Gesture and Emotion: Can Basic Gestural Form Features Discriminate Emotions?" In *Affective Computing and Intelligent Interaction and Workshops, 2009. ACII 2009. 3rd International Conference On*, 1-8.
- Kop, N., Euwema, M., & Schaufeli, W. (1999). Burnout, job stress and violent behaviour among Dutch police. *Work & Stress*, 13(4), 326-340. <http://dx.doi.org/10.1080/02678379950019789>
- Langner, C. A., & Keltner, D. (2008). Social power and emotional experience: Actor and partner effects within dyadic interactions. *Journal of Experimental Social Psychology*, 44, 848-856

- Lasthuizen, K. & Paanakker, H. (2016) "Combatting workplace aggression in detainee transport: the Dutch case", *International Journal of Public Sector Management*, Vol. 29 issue 1, pp. 11-29. Doi: <https://doi.org/10.1108/IJPSM-06-2015-0113>
- Leventhal, G. S. (1980). What should be done with equity theory? New approaches to the study of fairness in social relationships. In K. Gergen, M. Greenberg, & R. Willis (Eds.), *Social exchange: Advances in theory and research* (pp. 27-55). New York: Plenum.
- Lhommel, L., & Marsella, C. S. (2014). Expressing Emotion Through Posture and Gesture. In R. Calvo, S. D'Mello, J. Gratch, & A. Kappas (Eds.), *The Oxford Handbook of Affective Computing*. doi:DOI: 10.1093/oxfordhb/9780199942237.013.039
- Little, T. D., Jones, S. M., Henrich, C. C., & Hawley, P. H. (2003). Disentangling the "whys" from the "whats" of aggressive behaviour. *International Journal of Behavioral Development*, 27(2), 122-133. <http://dx.doi.org/10.1080/01650250244000128>
- Rossberg-Gempton, I., & Poole, G. D. (1993). The effect of open and closed postures on pleasant and unpleasant emotions. *The Arts in Psychotherapy*, 20(1), 75-82. [http://dx.doi.org/10.1016/0197-4556\(93\)90034-Y](http://dx.doi.org/10.1016/0197-4556(93)90034-Y)
- Roeleveld, W., & Bakker, I. (2010). *Slachtoffers van geweld binnen publieke taak*. Geraadpleegd van http://www.verwey-jonker.nl/doc/vitaliteit/1484_Slachtoffers-van-geweld-binnen-de-publieke-taak.pdf
- Risikind, J. H. (1984). They stoop to conquer: Guiding and self-regulatory functions of physical posture after success and failure. *Journal of Personality and Social Psychology*, 47(3), 479-493. <http://dx.doi.org/10.1037/0022-3514.47.3.479>
- Schouwstra, Sanneke J., & J. Hoogstraten. (1995). "Head Position and Spinal Position as Determinants of Perceived Emotional State." *Perceptual and Motor Skills* 81 (2): 673-674
- Schmid Mast, M. (2010). Interpersonal behaviour and social perception in a hierarchy: The interpersonal power and behaviour model. *European Review of Social Psychology*, 21(1), 1-33. <http://dx.doi.org/10.1080/10463283.2010.486942>
- Schmid Mast, M., Jonas K., & Hall, J. A. (2009). Give a person power and he or she will show interpersonal sensitivity: The phenomenon and its why and when. *Journal of Personality and Social Psychology*, 97, 835-850.
- Shoda, Y., & Mischel, W. (1993). Cognitive social approach to dispositional inferences: What if the perceiver is a cognitive social theorist? *Personality and Social Psychology Bulletin*, 19, 574-586.
- Thibaut, J., & Walker, L. (1975). *Procedural justice: A psychological analysis*. Hillsdale, NJ: Erlbaum.
- Tyler, T. R., & Wakslak, C. J. (2004). Profiling and police legitimacy: Procedural justice, attributions of motive, and acceptance of police authority. *Criminology*, 42(2), 253-281.

Tyler, T. R., & Folger, R. (1980). Distributional and procedural aspects of satisfaction with citizen-police encounters. *Basic and Applied Social Psychology*, 1(4), 281–292.

Ufkes, E. G., Giebels, E., Hilbrands, P., Vogel, J. (2015). Modellenboek trainingen agressie en geweld in de publieke context. Universiteit Twente

Zebrowitz, L. A., & Montepare, J. M. (2008). Social Psychological Face Perception: Why Appearance Matters. *Social and Personality Psychology Compass*, 2(3), 1497.
<http://doi.org/10.1111/j.1751-9004.2008.00109.x>

Appendix 1 – informed consent

Dear Participant,

By this experiment we try to gain insight in the experience of police interactions. You will see two short clips wearing VR-glasses and wear a bracelet to measure heart rate. The first clip is to experience the feeling of wearing VR-glasses. Next you have to read a short scenario. The second clip will show a police officer interacting with you, based on this scenario. After this you will fill in a short questionnaire about how you experienced the situation and the behavior of the officer. The experiment will take approximately 10 minutes of your time in total. Participation is completely voluntary and it is always possible to quit. The answers and data collected will be stored by random codes and not based on any personal information.

I have read the introduction and I agree to the terms and conditions of participation.

Yes / No

Appendix 2 – Questionnaire measuring items

Item	Measure
1. I felt irritated by the approach of the officer. * Strongly agree Agree Neutral Disagree Strongly disagree	Frustration
2. I felt frustrated by the approach of the officer. * Strongly agree Agree Neutral Disagree Strongly disagree	Frustration
3. I felt rebellious by the approach of the officer. * Strongly agree Agree Neutral Disagree Strongly disagree	Frustration
4. I would cooperate to the demands of the officer. Strongly agree Agree Neutral Disagree Strongly disagree	Frustration
5. I would act brutal to the officer. * Strongly agree Agree Neutral Disagree Strongly disagree	Frustration
6. I felt the ability to appeal to the decision of the officer. Strongly agree Agree Neutral Disagree Strongly disagree	Power
7. I felt powerful to object to the decision of the officer. Strongly agree Agree Neutral Disagree Strongly disagree	Power
8. I felt I could object to the decision of the officer. Strongly agree Agree Neutral Disagree Strongly disagree	Power
9. The approach of the officer was paternalistic. * Strongly agree Agree Neutral Disagree Strongly disagree	Power
10. I felt belittled by the approach of the officer. * Strongly agree Agree Neutral Disagree Strongly disagree	Power
11. The approach of the officer was authoritative. * Strongly agree Agree Neutral Disagree Strongly disagree	Power
12. The procedure followed by the officer was free of bias. Strongly agree Agree Neutral Disagree Strongly disagree	Procedural justice
13. The procedure was based on accurate information. Strongly agree Agree Neutral Disagree Strongly disagree	Procedural justice
14. If I appeal the decision, the officer would listen and rethink the situation. Strongly agree Agree Neutral Disagree Strongly disagree	Procedural justice
15. The officer was offensive. * Strongly agree Agree Neutral Disagree Strongly disagree	Procedural justice
16. The officer was aggressive. * Strongly agree Agree Neutral Disagree Strongly disagree	Procedural justice
17. The officer fairly used his right to stop me in this situation. Strongly agree Agree Neutral Disagree Strongly disagree	Fairness
18. The procedure was followed fairly by the officer. Strongly agree Agree Neutral Disagree Strongly disagree	Fairness
19. The officer communicated fairly according to the situation. Strongly agree Agree Neutral Disagree Strongly disagree	Fairness
20. How would you rate the overall fairness of stopping you in this situation? 1 = fair 2 3 4 5= unfair	Fairness
21. How would you rate the overall fairness of the decision of the officer to give you a fine? 1 = fair 2 3 4 5= unfair	Fairness

Note. Questions with * were recoded to positive answers.

Appendix 3 – scenario's*Scenario for procedural injustice*

Below you find a scenario, read this scenario carefully as the interaction will be based on this scenario.

There is a road (60 km/h) near your house close to the woods. You always take this road to go anywhere. Halfway this road there is an intersection with traffic lights, most of the time the road is quiet and the placement of the traffic light seems unnecessary to you, but you always stop. Today you have to go to work, but are running late. The road is quiet as always, and you only cross one other car. As you approach the crossing, the traffic light turns from green to orange. You decide to step on the gas, and cross the intersection. A few meters further on, the car you've crossed earlier catches up with you. In your rearview mirror, you see a red 'Stop Police' sign. You pull over and stop the car to talk to the police.

Scenario for procedural justice

Below you find a scenario, read this scenario carefully as the interaction will be based on this scenario.

There is a road (60 km/h) near your house close to the woods. You always take this road to go anywhere. Halfway this road there is an intersection with traffic lights, most of the time the road is quiet and the placement of the traffic light seems unnecessary to you, but you always stop. Today you have to go to work, but are running late. The road is quiet as always, and you only cross one other car. As you approach the crossing, the traffic light turns from orange to red. You decide to step on the gas, and cross the intersection. A few meters further on, the car you've crossed earlier catches up with you. In your rearview mirror, you see a red 'Stop Police' sign. You pull over and stop the car to talk to the police.

Appendix 4 – Script for film clip

Frame	What?	High power Non-verbal communication
00:00:02 – 00:00:07	Officer: ‘Hello, so what do you think you are doing?’	Compelling hard tone of voice Eye contact Wide leg stand Back straight Shoulders low
00:00:08 – 00:00:20	Officer: ‘I was driving behind you and you’ve crossed a red light, did you noticed?’	Crossing arms Unbroken Eye contact Wide leg stand Back straight Shoulders low
00:00:21 – 00:00:30	Officer: ‘Can I have your Identification card for your personal details?’	Grabbing the ID card aggressively One step forward and closer to the offender Wide leg stand Back straight Looking the offender in the eye
00:00:31 – 00:01:01	<i>Officer checks the ID card</i>	Scanning the body of offender from top till bottom Looking at the ID card Wide leg stand Back straight
00:01:02 – 00:01:12	For this violation, you will receive a fine. The amount you have to pay is 230 euro’s exclusive 5 euro administration costs.	Hard tone of voice Fast arm movements close towards offender Wide leg stand Back straight
00:01:13 – 00:01:32	<i>Grabs note block out of back pocket and writes down notes</i>	Writes something on note block Looks up one second without moving but keeps head tilted downwards Wide leg stand
00:01:33 – 00:01:48	You are not obliged to say anything. But what was the reason you’ve crossed the red light?	Hands move to sides of body on the hips Wide leg stand Head/chin tilted a bit upwards Back straight In the end Looking away from offender

Frame	What?	Neutral Non-verbal communication
00:00:03 – 00:00:07	Officer: ‘Hello, so what do you think you are doing?’	Soft tone of voice Eye contact Normal leg stand Back relaxed
00:00:08 – 00:00:12	Officer: ‘I was driving behind you and you’ve crossed a red light, did you noticed?’	Pointing past offender Unbroken Eye contact Normal leg stand Back relaxed
00:00:12 – 00:00:23	Officer: ‘Can I have your Identification card for your personal details?’	Takes ID card from offender neutral One step forward and closer to the offender Normal leg stand Back relaxed Looking the offender in the eye
00:00:24 – 00:00:50	<i>Officer checks the ID card</i>	Scans the body from bottom till top Looking at the ID card Normal leg stand Back relaxed
00:00:51 – 00:00:57	For this violation, you will receive a fine. The amount you have to pay is 230 euro’s exclusive 5 euro administration costs.	Soft tone of voice Slow arm movements towards offender Normal leg stand Back relaxed
00:00:58 – 00:01:15	<i>Grabs note block out of back pocket and writes down notes</i>	Writes something on note block Normal leg stand
00:01:16 – 00:01:36	You are not obliged to say anything. But what was the reason you’ve crossed the red light?	Hands move neutral to side of the body Normal leg stand Head neutral Back relaxed Keep looking at the offender in the end