THE INFLUENCE OF SOCIAL INTELLIGENCE ON IMITATION

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Abstract

In this study we will use a cross-sectional experiment to investigate whether an individual’s social intelligence score has an influence on their imitation behaviour while watching a video of a model. In recent literature, the observation of imitation behaviour is divided into two different phenomena: anticipated action (Genschow & Brass, 2015; Michel & Valach, 1997), where individuals imitate behaviour that is yet to occur, and imitation behaviour (Prinz, 2005; Proctor & Capaldi, 2010), where individuals imitate behaviour after it has occurred. The divide between anticipated action and imitation behaviour is in accordance with the ideomotor theory and the goal-directed theory. Using the social intelligence score, the differences and similarities between the two phenomena are observed. Results indicate that the two phenomena are correlated. Nevertheless, Social Intelligence, measured by means of the Tromsø Social Intelligence Scale (Silvera, Martinussen, & Dahl, 2001), only correlates with anticipated action (goal-directed theory), and not with imitation behaviour (ideomotor theory). Not only does the total social intelligence score influence the amount of anticipated action performed by an individual, it also influences the score on the social perspective subscale. Besides their social intelligence, each individual’s level of empathy was also registered. These results show that empathy does not influence the level of social intelligence, and therefore it does not influence the amount of imitation behaviour either.
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Introduction

Ever since individuals learned to coexist, non-verbal and verbal behaviour has been vital. Every individual uses non-verbal or verbal signals in their interaction with others, and learns to use these signals in communication with others. Not only do individuals understand these signals, they also copy these gestures. For example, can you recall a situation where you found yourself striking the same pose as your conversation partner, or have you ever started yawning when you saw someone else yawn? If so, you were probably imitating the behaviour of that other individual. But why do individuals copy these gestures? And what are the effects of these gestures on human communication?

The interaction between individuals is another vital aspect of human life. Did you know that 70 percent of the time, individuals are interacting with other individuals? Therefore it is necessary to be able to act appropriately according to the social situation. Some individuals know better how to comfort others who are feeling sad and adapt better to new (social) environments than others. If an individual is doing better in these social situations, does he or she then have a higher level of social intelligence? And what determines an individual's social intelligence?

Could these two vital aspects of human interaction be connected? Could an individual's level of social intelligence predict how many gestures that individual will copy?
Imitation

What is imitation?

Copying gestures in human behaviour is another way of saying that an individual is performing imitation behaviour. Research into imitation behaviour is has been going on for many decades, and already in the nineteenth century it was a subject of interest (James, 1890).

Imitation is the act of observing another person's action or behaviour and, as a result, acting in the same way (Hatfield, Cacioppo, & Rapson, 1992). The act can be conscious or unconscious (Bandura, 1977), and every human being—from babies to adults—all over the world engages in it (Meltzoff & Moore, 1989; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). However, not everybody does it in the same way, and not everybody imitates the same human behaviour.

The fact that individuals tend to imitate others is clear, and as is the case for most human behaviour, there is a reason why individuals perform imitation behaviour. Imitating others is used by individuals in such a way that it makes social interaction easier, and increases the positive social outcomes of an interaction (Bavelas, Black, Chovil, Lemery, & Mullett, 1988; Condon & Ogston, 1966; LaFrance, 1982).

Roads of imitation.

Research indicates that individuals imitate a wide range of human behaviour. Facial expressions (O'Toole & Dubin, 1968), language use (Cappella & Planalp, 1981; Giles & Powesland, 1975; Levelt & Kelter, 1982), emotions (Neumann & Strack, 2000) and specific behaviours (Chartrand & Bargh, 1999; Schelfen, 1964) are the most investigated types of imitated behaviour in humans.
Imitation of the language use or the verbal aspects of human interaction is easily noticeable in a conversation. People tend to copy each other's manners of speaking, mainly the accent and the rate of the speech (Cappella & Pslanalp, 1981; Giles & Powesland, 1975). Besides the manner of speaking, individuals also copy the words used by their interaction partner (Levett & Kelter, 1982).

The phenomenon where mothers and fathers open their mouths while feeding their baby (O'Toole & Dubin, 1968) is a way of imitating the facial expression of their child. This is an example of individuals copying their interaction partner's facial expression.

Emotions, or emotional expressions, can also be imitated. Emotional imitation is best described as one person's emotional expression causing a corresponding affective state in another person who is watching. Neumann and Strack (2000) had participants listen to a recording of a rather happy voice, or a rather sad voice. Afterwards, the participants stated that they experienced a mood corresponding to the one they had heard on the tape. The participants adopted, as it were, the affective state of the voice on the tape.

Although these kinds of imitation behaviour are used in social interaction, this study mainly focuses on the imitation of behaviour. Behavioural imitation, also known as 'the Chameleon Effect' (Chartrand & Bargh, 1999), is the way people unconsciously act in order to blend into a given set of surroundings. While interacting with another human being, people tend to adopt their discussion partner's posture and gestures (Schelfen, 1964). Leaning forward when your interaction partner does, or touching your face when they do are just a few examples of this type of imitation.

**Theoretical framework.**

Traditionally, these kinds of imitation phenomena are explained by a shared representation of observed and executed actions or by imitation of the individual's goal.
These two ways of imitation are represented by different approaches/theories with different assumptions on how individuals imitate: the ideomotor theory (Prinz, 2005; Shin, Proctor & Capaldi, 2010) with the perception–behaviour link (Chartrand & Bargh, 1999; Dijksterhuis & Bargh, Running head) and the goal-directed theory (Genschow & Brass, 2015; Michel & Valach, 1997).

**Ideomotor theory: perception–behaviour link.**

The ideomotor theory (Prinz, 2005; Shin, Proctor, & Capaldi, 2010), a theory descended from cognitive psychology and functional psychology, is based on the sensory motor theory (Catmur, Walsh, & Heyes, 2007; O'Regan & Noë, 2001). The sensory motor theory consists of two parts. When individuals imitate, they will first observe another individual's action (an external stimulus) and subsequently they will initiate that action and perform that action themselves (Hommel & Prinz, 1997). This phenomenon, also known as the perception–behaviour link, as described in social psychology, accounts for imitation behaviour as well (Chartrand & Bargh, 1999). When we see somebody performing a certain action, our representations of doing that action ourselves are activated and as a result we perform the action (imitation). The ideomotor theory assumes shared representations between individuals, who base their imitation behaviour on these shared representations.

The explanation of how the perception of behaviour leads to imitating that behaviour is formed by previous experiences with such behaviour. If, through a previous experience, the individual has learned that a certain action leads to a certain effect, a motor response is automatically activated to perform that action (even if the individual is merely thinking about the action). This imitation action is therefore automatically and unconsciously performed.

In a finger-tapping and finger-lifting experiment, Brass, Bekkering, and Prinz (2001) tested whether observing a movement automatically triggers the execution of the same movement.
When participants executed a compatible movement, their reaction time was significantly faster than when they performed an incompatible movement. Therefore, a confirmation for the ideomotor theory framework was found. This also corresponds with the principle of ideomotor actions put forth by James (1890): if one observes a certain action, the tendency to participate in that action increases.

This kind of imitation is merely imitating without thinking, as indicated by the ideomotor theory: “monkey see, monkey do”. It is a direct reaction between the observation (perception) and the action (behaviour). The individual does not have a specific goal in mind when performing imitation behaviour. The individual simply does it, without even being aware of it.

However, more recent findings on imitation suggest that imitative behaviour might be due to the adoption of other individuals’ goals (goal-directed theory) (Horn, Williams, & Scott, 2002; Wohlschlager, Gattis, & Bekkering, 2003).

**Goal-directed – anticipated imitation.**

The theory of goal-directed imitation indicates that imitation depends on the adaption of other individuals’ goals (Michel & Valach, 1997). The goal-directed theory implies that it is possible to imitate an individual without exactly duplicating that individual's behaviour. The observer discovers the goal of the performed action and imitates that behaviour in such a way that the pursued goal is achieved. For example, in an experiment performed by Bekkering, Wohlschlager, & Gattis (2000) pre-school children had to imitate an experimenter by touching their ears with their hands (contralateral or ipsilateral). With respect to the arm/hand used (contralateral or ipsilateral) to touch that ear (the action to achieve that goal), the children made fewer mistakes touching the same ear as the experimenter (the goal), and they made more mistakes touching the opposite ear of the experimenter (the goal).
Genschow and Brass (2015) indicate that imitation may be an anticipatory process. An anticipatory process is a process in which an individual anticipates the behaviour of the other individual.

As examined by Genschow & Brass (2015), imitation seems to be at least partially due to anticipatory processes. In their experiments, participants watched two videos. In one video the model wrinkled their nose, in the other video the model’s hair was falling over their face. The observers were taped, and the number of times they touched their nose or their hair was counted. Individuals who saw the nose-wrinkling video touched their nose more frequently than individuals who saw the hair video, and vice versa (individuals who saw the hair video performed more hair actions than individuals who saw the nose video). It is as if they anticipate the behaviour that is yet to occur and the goal of that behaviour, and that is why this kind of goal-directed imitation is also called anticipated action.

Although both forms of imitation are unconsciously and automatically performed, and interconnected (Pezzulo, Baldassarre, Butz, Castelfranchi, & Hoffmann, 2007; Verschoor, Weidema, Biro, & Hommel, 2010), there is a big difference between these two visions (ideomotor theory – imitation and goal-directed theory – anticipated action). The big difference between both is the timing of the imitation behaviour. If an individual performs imitation behaviour, the behaviour occurs after the interaction partner has displayed this behaviour, and if an individual performs anticipated action, the behaviour occurs before the interaction partner has displayed that specific behaviour.

**Why do we mimic?**

Although imitation is assumed to be automatic, past research indicates that imitation is also based on top-down modulations, such as empathy (Chartrand & Bargh, 1999; Tandney, Stuewig, & Mashek, 2007; Zajonc, Adelmann, Murphy, & Niedenthal, 1987), liking (Chartrand & Bargh, 1999; Williams, Cheung, & Choi, 2000), prosocial orientation (Ashton-James, van Baaren, Chartrand, Decety, & Karremass, 2007; Bailenson & Yee, 2005; Maddux, Mullen, & Galinsky, 2008; van Baaren R. B., Holland, Kawakami, & van Knippenberg, 2004; van Baaren R.
An important top-down modulation is empathy. In one experiment, for example, Chartrand and Bargh (1999) had participants engage in a picture-sorting task. While engaging in this task, an accomplice planted in the group by the researchers would repeatedly scratch their nose or shake their foot. The examiners measured the participants’ level of imitation. Afterwards, the participants’ level of empathy was assessed. The results demonstrated that the more empathic the participants were, the more they imitated the accomplice.

What Chartrand and Bargh (1999) examined is described by Tandney, Stuewig and Mashek (2007) as follows: by imitating others, individuals are more able to feel what other persons are feeling and, by imitation, they are more able to respond in a correct way to the other person’s emotional state of mind. Or if an individual imitates another individual, it helps them adopt the psychological standpoints of the individual in front of them (Zajonc, Adelmann, Murphy, & Niedenthal, 1987).

Similarly to empathy, research has found that individuals with a high need for social bonding imitate others more strongly. In one experiment, for example, it is found that individuals who imitate more often are found to experience less removal or exclusion from the social group (Williams, Cheung, & Choi, 2000) and are found to be more liked by their interaction partner than individuals who do not imitate (Chartrand & Bargh, 1999).

The aforementioned literature indicates that different social factors have a positive impact on imitation. Similarly, research has found that being imitated also has positive social consequences in human interaction. If imitated, individuals display more helpful behaviour (e.g. picking up a pen) towards other individuals, they donate more money, they receive more and bigger tips and are seen to be more trustworthy.
Furthermore, they feel closer to other individuals and come to an agreement more often during discussions (Ashton-James, van Baaren, Chartrand, Decety, & Karremass, 2007; Bailenson & Yee, 2005; Maddux, Mullen, & Galinsky, 2008; van Baaren R. B., Holland, Kawakami, & van Knippenberg, 2004; van Baaren R. B., Holland, Steenaert, & van Knippenberg, 2003). All these consequences of imitation behaviour can be summed up as the top-down modulation prosocial orientation or prosocial behaviour of an individual to perform imitation behaviour.

Human beings are herd animals and want to be accepted in a social group and experience the feeling of affiliation. This top-down modulation is shown with capuchin monkeys (Paukner, Suomi, Visalberghi, & Ferrari, 2009). Capuchin monkeys who were being imitated gave the experimenter more attention, interacted more with the experimenter, and spent more time physically close to the experimenter. But human beings display this kind of behaviour as well (Lakin, Chartrand, & Arkin, 2008; Uldall, Hall, & Chartrand, 2008; Williams, Cheung, & Choi, 2000). If individuals feel different from their peers, or feel excluded from the group, they will perform more imitation behaviour than individuals who do not experience a feeling of being different from the in-crowd or from their peers.

In situations where individuals exchange thoughts (such as in classrooms and clinical settings) there is an increase in the level of rapport when the level of imitation increases. In a classroom experiment concerning the effect of nonverbal behaviour, the level of rapport depends on the synchrony of arm and body position of the student with the teacher. The more students and teachers imitated each other’s arm and body positions, the higher the rating for the level of rapport in the classroom (LaFrance & Broadbent, 1976). In a psychotherapy setting, Charney (1966) found that the more imitation behaviour was performed in the session, the more noticeable rapport there was between the therapist and the client.

All these elements (empathy, liking, prosocial orientation affiliation and rapport) are seen as top-down modulators for the level of imitation behaviour displayed by an individual.
Interestingly, these top-down moderators are linked to social intelligence. For example, individuals who have a higher empathy score also have a higher social intelligence score (Riggio, Tucker, & Coffaro, 1989) and are more willing to help others (Batson & Coke, 1981; Eisenberg & Miller, 1987). So could it be that social intelligence itself moderates imitative behaviour as well?

**Social Intelligence**

**Definitions.**

Throughout the years, many researchers have defined social intelligence in different ways. Although every definition is slightly different, each of the definitions consists of two crucial parts: a cognitive part (understanding how other people feel) and a behavioural part (being able to interact with others) (Silvera, Martinussen, & Dahl, 2001; Thorndike & Robert, 1920).

Social intelligence is often and widely defined as our ability to interpret other individuals' behaviour in terms of mental states (thoughts, intentions, desires and beliefs), to interact both in complex social groups and in close relationships, to empathize with other people’s state of mind, and to predict how others will feel, think and behave (Baron-Cohen, et al., 1999). This definition includes not only a cognitive component and a behavioural component, but a third component as well: empathy.

Social intelligence is a multidimensional concept and is different from academic intelligence as indicated by Marlowe (1986). Even though social and academic intelligence are different constructs, both are multifaceted, and correlate positively with each other (Riggio, Messamer, & Throckmorton, 1991). So individuals with a higher social intelligence score will have, on average, a higher academic intelligence score as well.
A long history.

Since Thorndike and Robert (1920) introduced the concept of social intelligence, it has been elaborated and enriched significantly. Thorndike and Robert divided social intelligence into two factors: a cognitive factor (an ability to understand other people) and a behavioural factor (act wisely in interpersonal relationships).

Departing from the binary division proposed by Thorndike and Robert (1920), many researchers have since changed the definition of social intelligence. Guilford (1959), for example, added so many factors to the definition of social intelligence that he came to a total of 120 abilities with a focus on the idea about what social intelligence is and how social intelligence is expressed in interaction with others.

As a set of 120 abilities is not convenient to measure, O’Sullivan, Guilford, & Demille (1965) focused on only six abilities, two of which were the same factors as in the definition of social intelligence by Thorndike and Robert (1920).

In 1999, Romney & Pyryt took a new look at the six abilities found by O’Sullivan et al. (1975). They tested two models to see which one fit the data best: a model in which all six factors are independent of each other, and a model in which all six factors load on a general factor. The results suggest that the six factors could be best explained by a general factor.

In this study, we will focus on the definition of Thorndike and Robert (1920) where a cognitive and behaviour factor is included in the definition of social intelligence.

**Does social intelligence as a trait exist?**

As we have seen, there are many different definitions, models and ways to measure social intelligence, but does social intelligence as a trait exist?

Two studies carried out by Petrides, Mason, & Sevdalis (2011) confirm that there is such a thing as ‘trait social intelligence’ (Trait SI). The first test consists of recognizing the facial expressions of individuals.
The second test investigates whether individuals deem it appropriate to apologize for certain social transgressions.

A higher score on the Trait Social Intelligence Questionnaire (the instrument used to measure the level of social intelligence) indicates that individuals are more likely to deem it appropriate to apologize for certain social transgressions, and that they are able to decode facial expressions more accurately than individuals who have a lower score on the Trait Social Intelligence Questionnaire. Both studies confirm the idea that social intelligence as a trait exists.

The effects of social intelligence.

Given that social intelligence is a kind of intelligence that measures the ability to interact with other individuals, the effects of social intelligence affect others as well.

If each team member's social intelligence score is higher than average, this social intelligence score will determine the success of the team, five times more so than the average IQ score of the team members (Woolley, Chabris, Pentland, Hashmi, & Malone, 2010).

Individuals with a higher social intelligence score are better at interacting with other individuals. They are more tactful and have a better intuition of what is appropriate to say in a conversation and what is not; they have a better understanding of the scripts that are used in a given form of social interaction; and they are more capable of playing different social roles (in which they allow themselves to feel more at ease with different types of individuals according to the social situation) (Riggio, 1986; Sternberg, 1985; Sternberg, et al., 2000).
Measuring social intelligence.

Ever since Thorndike and Robert (1920) introduced the concept of social intelligence, many researchers have developed different questionnaires (Frankovsky & Birknerova, 2014; Silvera, Martinussen, & Dahl, 2000) and tests (Chapin, 1942; Moss, 1926; Thorndike & Stein, 1937; O'Sullivan, Guilford, & Demille, 1965; Süß, Seidel, & Weis, 2007) to measure social intelligence.

Questionnaires.

The two most important and recent questionnaires to measure social intelligence are the Tromsø Social Intelligence Scale (TSIS) (Silvera, Martinussen, & Dahl, 2001) and the Measuring Social Intelligence Scale (MESI) (Frankovsky & Birknerova, 2014).

The Tromsø Social Intelligence Scale (TSIS), created by Silvera, Martinussen, & Dahl (2001), measures social intelligence through self-reporting. It defines social intelligence through three factors: social information processing or social perspective (e.g. “I can predict other people’s behaviour”), social skills (e.g. “I fit in easily in social situations”) and social awareness (e.g. “I often feel that it is difficult to understand other people’s choices”). The TSIS adapts the questionnaire with the three factors (social perspective, social skills and social awareness) to the facets of the definition of social intelligence (cognitive factor and behaviour factor). Social skill items correspond to the behavioural component, while social information processing and social awareness measures the cognitive component of social intelligence.

The TSIS items originate from Norway and are therefore written in Norwegian. They have been translated into Italian, English and Dutch (Gini, 2006; Gini & Lotti, 2004; Meijs, Cilessen, Scholte, Segers, & Spijkerman, 2010; Silvera, Martinussen, & Dahl, 2000). For all these languages (Italian, English, Dutch and Norwegian) the questionnaire is valid.
The purpose of Frankovsky & Birknerova (2014) was to determine how people act in social situations. To this end, they created a questionnaire with 21 items on a scale from zero to four, the Measuring Social Intelligence Scale (MESI).

The first factor is manipulation. When an individual scores high on manipulation, he or she is able to persuade others to do almost anything (e.g. "If I want, I know how to use others for my own benefit"). Empathy is the second factor. When someone has a high score for empathy, this individual is able to recognize the intentions, feelings and weaknesses of other individuals (e.g. "I am able to recognize the wishes of others"). The last factor extracted is social irritability. Individuals who are nervous in contact with other people score high on items measuring social irritability (e.g. “I feel uneasy when I have to adapt to new people”).

**Tests.**

Besides questionnaires for people to fill in to measure their level of social intelligence, tests (another qualitative manner of measuring) have also been developed. The search for a good test to measure social intelligence started at the beginning of the twentieth century.

The George Washington Social Intelligence Test was one of the first tests to measure social intelligence. This paper-and-pencil test measures social intelligence through seven subtests (judgment in social situations, recognition of the speaker's mental state, observation of human behaviour, ability to memorize names and faces, sense of humour, identification of emotional expression, and social information) (Moss, 1926; Thorndike and Stein, 1937). Due to lack of validity (McClatchey, 1929; Strang, 1930) the test is no longer used, but it was the beginning of the development of other social intelligence tests (Chapin, 1942; Guilford, 1959; O'Sullivan, Guilford, & deMille, 1965; Süß, Seidel, & Weis, 2007).
In a test with 23 subtests, O'Sullivan, Guilford, & deMille (1965) developed a way to measure social intelligence, dissociating social intelligence from verbal intelligence. Each subtest has almost no verbal instructions, therefore only social intelligence is measured and not verbal intelligence.

In the social insight test, consisting of 25 questions about social situations, Chapin (1942) looks at social intelligence in another way. The basic idea of this test is that social intelligence is a way in which people state how a person will behave in a specific context. This test focuses on the ability to predict how individuals will behave in a certain social situation (behaviour factor) and why these individuals behave that way (cognitive factor) in that situation. As an example, this is one of the 25 questions:

A boy, age 15, is complained about by his parents and teachers. He stays out late at night, is irresponsible, uncooperative, apathetic and inconsiderate. He is unpopular and annoys other children. He has tendencies to lie and steal whenever he can “get away with it.” He has little or no interest in school. In the following list of factors, indicate the one which probably would be most closely associated with this boy’s misbehaviour:

A. He is lazy
B. He is disobedient in school
C. He has an introverted personality
D. He has an extraverted personality

One of the most recent tests developed to measure social intelligence is the Magdeburg Test of Social Intelligence (MTSI) (Conzelmann, Weis, & Süß, 2013; Süß, Seidel, & Weis, 2007). This test takes a different approach to measuring social intelligence. Rather than filling out a questionnaire, individuals taking this test have to perform tasks. Each task in the MTSI measures one of the five subscales of social intelligence (social understanding, social memory, social perception, social flexibility and social knowledge).
In the study from 2007, only social understanding (SU), social memory (SM) and social perception (SP) were incorporated in the tests. The test consists of sixteen different tasks measuring SU, SM, and SP. Although this test is rather refreshing and looks at it in a different way, it is a very long test. This test is also very new and research for construct validity is still going. Therefore, it is not advisable to use this test in our experiment.

**Can social intelligence be trained?**

Social training does exist and has been proven effective for all types of individuals. Social training has already been developed for individuals with schizophrenia (Wallace, 1982), psychiatric patients (Christoff & Kelly, 1985) and mentally retarded clients (Andrasik & Matson, 1985).

Besides interventions to improve the social skills of individuals with a mental disorder, Marlowe (1985) cultivated a type of training for individuals who do not have any mental disorder. This training, applicable for adolescents and for adults, consists of behavioural and educational interventions such as social skills, interpersonal communications, social problem-solving, team development, coaching, self-image, negotiation, assertiveness.

Having the ability to increase an individual his or her social intelligence is important for an individual who has to communicate and has to interact with another individual.
The Research Question

The idea for this experiment is to look whether social intelligence has an influence on imitation. Whether social intelligence moderates the level of imitation performed by an individual is therefore our main question.

Social intelligence is seen as how an individual is able to interact with others (1) and the understanding of other individuals’ feelings (2). And given that imitation is the level of copying the behaviour of others to make social interactions easier (James, 1890; Thorndike & Robert, 1920), could both be connected?

As mentioned in the literature study, imitation can be divided into two different phenomena: “monkey see, monkey do” imitation (ideomotor theory) (Prinz, 2005; Shin, Proctor, & Capaldi, 2010) and anticipated action (goal-directed theory) (Genschow & Brass, 2015; Michel & Valach, 1997). Earlier research found that both phenomena are connected (Pezzulo, Baldassarre, Butz, Castelfranchi, & Hoffmann, 2007; Verschoor, Weidema, Biro, & Hommel, 2010). Therefore we expect a correlation between both phenomena. If an individual performs more anticipated action, that individual will also perform more imitation, and vice versa (the more imitation behaviour, the more anticipated action that individual will perform).

Besides the fact that imitating behaviour modulates the rapport (Charney, 1966; LaFrance & Broadbent, 1976), liking (Chartrand & Bargh, 1999; Williams, Cheung, & Choi, 2000), affiliation (Lakin, Chartrand, & Arkin, 2008; Paukner, Suomi, Visalberghi, & Ferrari, 2009; Uldall, Hall, & Chartrand, 2008; Williams, Cheung, & Choi, 2000), prosocial orientation (Ashton-James, van Baaren, Chartrand, Decety, & Karremass, 2007; Bailenson & Yee, 2005; Maddux, Mullen, & Galinsky, 2008; van Baaren R. B., Holland, Kawakami, & van Knippenberg, 2004; van Baaren R. B., Holland, Steenaert, & van Knippenberg, 2003) and empathy (Chartrand & Bargh, 1999; Tandney, Stuewig, & Mashek, 2007; Zajonc, Adelmann, Murphy, & Niedenthal, 1987) of an individual towards another person, we also know that social intelligence as a trait exists (Petrides, Mason, & Sevdalis, 2011) and that social intelligence influences the way individuals are
capable of handling social situations (Riggio, 1986; Sternberg, 1985; Sternberg, et al., 2000).

Based on these findings, social intelligence could be a moderator for the amount of social intelligence performance. As both imitation behaviour (anticipated action and imitation) and social intelligence are connected to being able to perform better in certain social circumstances, the score on social intelligence will partly determine the score on imitation behaviour (anticipated action and imitation).

- **Hypothesis 1**: the higher individuals score on social intelligence, the more they will imitate another person.
- **Hypothesis 2**: the higher individuals score on social intelligence, the more they will perform anticipated actions.
- **Hypothesis 3**: anticipated action and imitation are correlated (the more an individual imitates another person, the more her or she will also perform anticipated action and the other way around).
Methods

Design

The design is a within-subject design. This means that each participant partook in every treatment. So each participant was adjusted both in the control/baseline phase and in the manipulated phase of the experiment. Because of this design, no random assignment of the participants in a group was necessary.

Because all participants only participated once in the experiment and every participant did the experiment at one moment in time, the design of the experiment is a cross-sectional design.

Bias is a concept to keep in mind, because it can disrupt the experiment and make the results void or untrustworthy. To minimize the effects of the bias of the experimenter, the same experimenter is used each time. The experimenter also has a strict dialog of which information is given to the participants, and how it is given. By keeping the information for each participant unchanged, there is no influence of the information on the obtained results. The location bias was adjusted by taking the same location each time. Since the faculty of Psychology at the University of Ghent has specially-designed rooms for experiments, one of these rooms was used for the experiment.

Participants

The experiment was conducted with forty-one participants with an average age of 20.83 (SD = 2.70, [17, 35]), 36 of whom were female and 5 were male. The 36 female participants had an average age of 21.14 (SD = 2.94, [17, 36]) and the 5 male participants had an average age of 18.6 (SD = 1.02, [17, 20]). All participants were right-handed. To recruit the participants, an announcement was made on Experimetrix.
By attending the experiment, the participants could earn a credit for the Methodology course, so all participants were students at the University of Ghent: faculty Psychology and Pedagogy. Based on the power in the Genschow & Brass (in press) sample size was estimated. Because of the within-subject design, no randomization was necessary.

All participants were of Belgian nationality. One participant had a University degree (2.5%), and the others had a secondary school diploma (43.9%) or a Bachelor’s degree or college degree (53.6%).

**Material and measuring equipment**

The experiment consists of three parts. First the participants need to fill in the informed consent form and a small demographic questionnaire. Then they watch a 25-minute video, consisting of a five minute control/baseline extract and two extracts with manipulation (each manipulation lasts ten minutes). Finally, they are asked to fill in three questionnaires.

The video used during the experiment was made in a setting that was to be as neutral as possible. Therefore an empty room was chosen, with a white background and no distractions on the wall or on the table. The only thing on the table was a book, the cover of which was invisible to the participants. The actor in the video, hereinafter referred to as the model, reading out loud from the book, was of the female gender. The model wore a black T-shirt (plain clothing), no make-up and shoulder-length hair (so that confusion with a boy was excluded). The model read aloud from the book without particular intonation, and without looking into the camera.

The book read by the model needed to be a book that was interesting, yet easy to understand. Because of these reasons, the book “Pluk van de Petteflet”, a popular Dutch children’s book, was chosen.

The participant was filmed with a webcam in a laptop. Through this observation, the imitation behaviour performed by the participant could be measured.
During an observation it was necessary to know exactly in which phase of the experiment the participant arrived. Therefore the video was assembled in a PowerPoint presentation. Each time a new part of the experiment started (baseline condition, the Anticipated Action condition or the Imitation condition), the participant had to press the space bar on the keyboard. Because of the recorded action of pushing the button, the experimenter knew exactly which phase of the experiment the participant was in.

After watching the videos, the Dutch version of the Tromsø Social Intelligence Scale (TSIS) was used to measure social intelligence (Cronbach’s $\alpha = .793$) with three subscales: social perspective (Cronbach’s $\alpha = .662$), social skills (Cronbach’s $\alpha = .847$) and social awareness (Cronbach’s $\alpha = .634$) (Meijs, Cillessen, Scholte, Segers, & Spijkerman, 2010). To measure social intelligence, a total of 21 items are used. These 21 items are equally divided over the three subscales (so every subscale is accounted for by seven unique items). Each item is measured by a Likert scale from one to seven, where one stands for ‘helemaal niet van toepassing’ (not at all applicable) and seven stands for ‘helemaal wel van toepassing’ (completely applicable).

Social perspective is the way individuals are able to replace their feelings or actions by what the other person would do in that situation. This subscale is measured with items such as “I can predict other people’s behaviour”. The social skills subscale measures the ease with which individuals are able to act appropriately in social situations (e.g. “I fit in easily in social situations”). The last subscale (social awareness) is measured with items such as “I often feel that it is difficult to understand other people’s choices”. This measures how individuals are aware of their own capacity to adapt in social situations.

While the participants watched the video, they were being filmed. The filming of the participants happened with the built-in webcam of the laptop used to play the video. These webcam observations were then tallied by the experimenter. Each time the participant wrinkled, scratched or touched their nose was counted as one imitation, regardless of the duration of the wrinkling, scratching or touching.
Procedure

Contact with the participants was through the University of Ghent. All participants could enter the experiment and in return get a credit for the Methodology course. Before the experiment started, the participants filled in an informed consent form, informing the participants that they would be part of a confidential experiment and that they could stop any time they wanted.

After filling in the informed consent form (attachment 1), the participants filled in a demographic questionnaire (age, studies, diplomas, gender …) (attachment 2). The video had to be started by pressing the space bar on the keyboard. To improve the sound quality, each participant wore earphones, no headphones, during the experiment.

During the 25-minute video, participants watched a person read out loud from a book. The first five minutes, the person read fluently without any manipulation, and this is seen as the baseline condition (see figure 1). The next ten minutes were manipulated by the model in the video (Anticipated Action condition) (see figure 2). In the anticipated Action condition, the manipulation performed was the wrinkling of the nose. This manipulation took place every 30 seconds. So in the ten-minute video, the model wrinkled her nose about 20 times. In the last ten minutes of the video, another manipulation was performed by the model. Now she did not wrinkle her nose, but scratched it (Imitation condition) (see figure 3).
Just as in the Anticipated Action condition, this manipulation took place every 30 seconds, with a total of 20 manipulations during the ten-minute video.

Between the baseline condition and the Anticipated Action condition and between the Anticipated Action condition and the Imitation condition, the film stopped and a text appeared. The text stated that to start the next part of the movie, the participants had to press the space bar. By counting the nose actions performed by the participant, anticipated action imitation and imitation behaviour could be measured.

The counting of the nose actions was by keeping a tally. The nose touching and nose scratching part was measured by counting each time the participants touched their nose with another body part (fingers, hands, arms …). Each one of these gestures counted as one nose action. The nose wrinkling action was measured by counting every time the participants moved their nose not by another body part, but with their facial muscles (moving the nose to left, to the right or by sniffing).

After the video, the participants had to fill in questionnaires, one of which was an indication of how well they had listened to the video (attachment 3). It contained questions about the text and about how their nose felt. These questions served as an indication about how their nose felt during the videos. To measure social intelligence, the Dutch version of the Tromsø Social Intelligence Scale (attachment 4) was used.

Two things were kept secret at the start of the experiment. The first was that the participants were not aware of the purpose of the experiment. During the recruitment of participants, a cover story was told, claiming that the experiment was about language comprehension, which would be measured by watching a
video and answering a questionnaire about the language used in the video. The second was that the participants did not know they were being captured on film. After the experiment, each participant was debriefed and given the option to withdraw from the experiment. None of the participants chose that option to terminate their involvement with the experiment.

Additional measures

Besides social intelligence, empathy was measured as well. Measuring these two extra facets guarantees that there is no moderation effect found between social intelligence, empathy and psychopathy on the amount of imitation or anticipated action performed by the participants.

Therefore the Dutch version of the Interpersonal Reactivity Index (IRI) (Cronbach’s α = .849) was filled in to measure empathy (De Corte, Buysse, Verhofstadt, & Roeyers, 2007; Davis, 1994) (attachment 5) and the Dutch version of the Levenson Self-Report Psychopathy Scale (Cronbach’s α = .772) (Van De Sompel, 2011) was used (attachment 6).

It is necessary to control for empathy because empathy has already been proven to be a top-down moderator for imitation behaviour (Chartrand & Bargh, 1999). So by controlling for this factor we can assure that social intelligence is another facet that explains the imitation behaviour of an individual.

The Interpersonal Reactivity Index (IRI) (De Corte, Buysse, Verhofstadt, & Roeyers, 2007; Davis, 1994) consists of 28 items to measure the total score of empathy, and has four subscales (social perspective, personal distress, fantasy and empathic concern). The ‘perspective-taking’ subscale measures the way a person adopts another person’s psychological perspective (e.g. “I sometimes try to understand my friends better by imagining how things look from their perspective”). Items such as “I am usually objective when I watch a movie or play, and I don’t often get completely caught up in it” measure the ‘personal distress’ subscale, whereby personal distress is the tendency to have unpleasant feelings when seeing other people experience negativity.
A third subscale is ‘fantasy’, or the degree to which individuals identify with fictional characters (e.g. “I daydream and fantasize, with some regularity, about things that might happen to me”). The last subscale is ‘empathic concern’, described as experiencing positive feelings toward others (warmth, concern …) (e.g. “I am often quite touched by things that I see happen”).

All subscales consists of seven items measured on a Likert scale from zero (helemaal niet van toepassing, not at all applicable) to four (helemaal wel van toepassing, completely applicable).

The Levenson Self-Report Psychopathy Scale uses 26 items to measure the amount of psychopathy in individuals. Each item is measured with a Likert scale from one (helemaal niet van toepassing, not at all applicable) to four (helemaal wel van toepassing, completely applicable).

**Data analysis**

For the analysis of the collected data, SPSS Statistics 22 (Statistical Package for Social Science software version 22) was used. The data were analyzed for correlation patterns and interactions, paired sample T-test and regression analyses. For all tests performed, a significance level of ≤ .05 was obtained.
Results

Paired sample t-test

It is important to choose the correct type of t-test. For instance, it is possible to contrast two groups with each other (an independent sample t-test). However, since only one group was observed in this experiment, an independent sample t-test is unfit for use. It is better to use a paired-sample t-test, where one group is compared at two different moments in time.

To test the difference in amount of imitation behaviour between anticipated scratching and imitated scratching, a paired-sample t-test was conducted. A t-test is necessary to make sure that there is no primary effect and to exclude that fatigue is the component that influences the results. Because every participant watched the same video in the same order, a primary effect needs to be eliminated. The primary effect or the fatigue can declare why only anticipated scratching has a significant correlation and why imitated scratching has no significant correlation.

Taking a closer look at the t-test, both the correlation table (table 3) and the paired samples (table 4) are taken into account for both pairs. In the first pair, the amount of anticipated scratching is paired with the amount of imitated scratching. As seen in the correlation table of the t-test, individuals who display more anticipated scratching will show more imitated scratching as well ($r = .525$, $p = .000$). As shown in the paired samples table, there was no significant difference in the anticipated scratching ($M = 1.976$, $SD = 2.242$) and the imitated scratching ($M = 2.537$, $SD = 2.388$) variable; $t$ (40) = -1.590, $p = .120$. This result suggests that anticipated scratching does not occur more frequently than imitated scratching.

To test the difference between the total amount of imitation between video two and three, a second paired-sample t-test was conducted. This paired-sample t-test is used to assess whether there is a primary effect on the results. Primary effects may appear when a participant gets tired during the experiment.
Tiredness can be an explanation for why there is a difference in significance between the results of videos two and three.

The correlation of the paired-sample t-test between the total amount of imitation between videos two and three shows that the more an individual imitates behaviour during the second video, the more imitation behaviour is shown in the third video (r = .586, p = .000). There is no significant difference between the total amount of imitation behaviour in video two (M = 3.66, SD = 2.506) and video three (M = 4.05, SD = 5.428); t (40) = -1.113, p = .273. This indicates that there is no noticeable primary effect or fatigue in the experiment. The behaviour of anticipated scratching in the second video does not occur more frequently than the imitated behaviour in video three.

Correlations and interactions

The correlations between the videos (baseline, the Anticipated Action condition and the Imitated Action condition) and the Tromsø Social Intelligence Scale and its subscales are analyzed. According to the hypothesis, a positive correlation is expected between social intelligence —specifically the Social Processing subscale— and the Anticipated Action condition and Imitation condition.

The data for each video are divided in three facets. The total amount of imitation behaviour is the amount of nose-wrinkling and the amount of nose-scratching or nose-touching during the video. The amount of nose-scratching or nose-touching in video two is the amount of anticipated action performed by the participant during the ten-minute video. The amount of nose-scratching or nose-touching in video three is the amount of imitation performed by the participant during this video (which also takes ten minutes). The baseline condition is introduced because participants sometimes touch their nose without observing another person doing so (their nose is itching, for example).
In video two, a distinction can be made between imitation (nose-wrinkling) and anticipated action (nose-scratching or nose-touching behaviour), because a participant can either anticipate the model’s behaviour (touching or scratching the nose) or can simply imitate the observed behaviour (wrinkling the nose).

Since the duration of the Anticipated Action condition and the Imitated Action condition (ten minutes) was twice as long as that of the baseline condition (five minutes), an adjustment had to be made. Each condition (Anticipated Action condition and Imitated Action condition) was subtracted from the baseline condition.

In order to subtract the Anticipated Action condition from the baseline condition and the Imitated Action condition from the baseline condition, two extra variables were constructed. For the Anticipated Action condition, the Anticipated Scratching variable was conducted. This variable is the amount of nose-touching performed by the participant in the Anticipated Action condition. For the Imitated Action condition, the Imitated Scratching variable was conducted. This variable is the amount of nose-touching performed by the participant in the Imitated Action condition. The scores of Anticipated Scratching and Imitated Scratching were then subtracted from the baseline score of nose-touching.

Individuals who had a higher score on Anticipated Scratching will have a higher score on Imitated Scratching as suggested by the significant positive correlation between Anticipated Scratching and Imitated Scratching ($r = .525, p = .000$).

A significant positive correlation is found between Anticipated Scratching and the total social intelligence score ($r = .374, p = .016$), as well as between the Anticipated Scratching variable and the social perspective subscale ($r = .408, p = .008$), and between the social skills subscale ($r = .354, p = .023$) in all videos.
### Table 1: Correlations between Video observations, social intelligence, empathy and psychopathy (With Pearson Correlation)

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<td>-.338*</td>
<td>-.243</td>
<td>1.00</td>
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** Correlation is significant at the 0.01 level (1-tailed). * Correlation is significant at the 0.05 level (1-tailed). TSIS = Tromsø Social Intelligence Scale, SP = Social Processing, SS = Social Skills, IRI = Interpersonal Reactivity Index, PP = Levenson Psychopathy Scale
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**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed). TSIS = Tromsø Social Intelligence Scale, SP = Social Processing, SS = Social Skills, IRI = Interpersonal Reactivity Index, PP = Levenson Psychopathy Scale
Regression

To test the relation between the Anticipated Action condition and social intelligence, two separated regression analyses were conducted: a regression analysis for the total social intelligence score, and one for the social perspective subscale. For the relation between Imitation and social intelligence, two separate regression analyses were conducted as well: one for the total social intelligence score, and one for the social perspective subscale.

A first regression analysis computes the relation between the total social intelligence score and anticipated scratching. This regression model has a significant effect \( F (1.39) = 6.329, \ p = .016 \), so this regression model provides a statistically significant prediction of the anticipated scratching score. The total score on the Tromsø Social Intelligence Scale (TSIS) was a significant predictor for the dependent variable ‘anticipated scratching’ \( (\beta = .374, \ t (39) = 2.516, \ p < .05) \). For every extra point on the TSIS, a participant shows .074 times more anticipated scratching. The overall model fit is \( R^2 = .140 \).

For social perspective (one of the subscales of the Tromsø Social Intelligence Scale), a regression analysis was conducted to assess the relation between social intelligence and anticipated scratching.

The effect of social perspective significantly predicts the anticipated scratching score \( F (1.39) = 7.780, \ p = .008 \). The social perspective subscale is a significant predictor for anticipated scratching \( (\beta = .408, \ t (39) = 2.789, \ p < .05) \). So if a participant scores one point more on the social intelligence subscale, their amount of anticipated scratching will increase by .222. The overall model fit is \( R^2 = .166 \).
Table 3: Paired sample correlations between anticipated scratching and imitated scratching and between the total score of videos 2 and 3.

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<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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Table 4: Paired sample t-test between anticipated scratching and imitated scratching and between the total score of videos 2 and 3.

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<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference Lower</th>
<th>95% Confidence Interval of the Difference Upper</th>
<th>T</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pair 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-561</td>
<td>2.259</td>
<td>.353</td>
<td>-1.274</td>
<td>.152</td>
<td>-1.590</td>
<td>40</td>
<td>.120</td>
</tr>
<tr>
<td><strong>Pair 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-390</td>
<td>2.246</td>
<td>.351</td>
<td>-1.099</td>
<td>.319</td>
<td>-1.113</td>
<td>40</td>
<td>.273</td>
</tr>
</tbody>
</table>
Neither the total social intelligence score ($F(1,39) < 1.000, p > .323$), nor the score on the social perspective subscale ($F(1,39) < 1.561, p > .219$) has a significant relation with imitated scratching.

As mentioned earlier, 12.2% of the participants were male, while the majority of them was female (87.8%). To measure whether gender had an influence, the regression analyses were performed, but now divided for the male and the female gender. No problems were detected in the female gender analyses, but the regression of the male gender revealed a power problem. Therefore the analysis of the male gender has less power than the female group, and it should be noted that the results may not hold if a bigger group of participants is tested. The regression analyses are specifically performed for the Social Perspective subscale with the dependent variable being anticipated scratching, imitated scratching and the interaction.

For the female group, a regression analysis between the anticipated scratching and the Social Perspective subscale was conducted. The result for this regression analysis was marginally significant at the $p < .10$ level ($F(1, 34) = 3.580, p = .067$). The score on the Social Perspective subscale is a marginally significant predictor for the dependent variable ‘Anticipated Scratching’ ($\beta = .309, t(34) = 1.892, p < .10$). So for every extra point on the Social Perspective subscale, a female participant shows .175 times more anticipated imitation. The overall model fit is $R^2 = .095$. For the male group, no significant result was found in the regression between Social Perspective and anticipated scratching ($F(1,3) < 2.623, p > .204$).

Neither gender group showed a significant result for the regression between the Social Perspective subscale and the dependent variable ‘Imitated Scratching’ ($F(1, 34) < .369, p > .548; F(1,3) < .369, p > .586$). For the interaction of anticipated scratching and imitated scratching with the Social Perspective subscale, only the female group had a significant result ($F(1,34) < 5.059, p > .031$).
The Social Perspective score is a significant predictor for the interaction between anticipated scratching and imitated scratching ($\beta = .360, t (34) = 2.249, p < .05$). The overall model fit is $R^2 = .130$.

**Additional measures**

Besides the social intelligence score, empathy and psychopathy were also measured. The correlations between empathy, measured with the Interpersonal Reactivity Index, and the amount of imitation behaviour are not significant, nor are the correlations between psychopathy, measured with the Levenson Psychopathy Scale, and the amount of imitation behaviour.

Regression analyses between empathy and anticipated scratching or imitated scratching were conducted, but none of the regressions gave a significant result ($F (1,39) < .499, p > .484; F (1,39) < 1.174, p > .285$). Empathy is not a significant predictor for anticipated scratching or imitated scratching.

For regression analyses of psychopathy with anticipated scratching or imitated scratching no significant results were found either ($F (1,39) < 1.188, p > .282; F (1,39) < 1.426, p > .240$).
Discussion and conclusion
This experiment was conducted to determine whether social intelligence has an influence on imitation behaviour. More specifically, we first subdivided imitation behaviour into anticipated action and imitation behaviour, and subsequently we determined whether social intelligence has a different, significant influence on one or both concepts.

Hypotheses
In order to arrive at a good overview of the results combined with the hypotheses set forth, each of the hypotheses will be analyzed individually by means of data analysis.

Our first hypothesis is described as follows: ‘the higher individuals score on social intelligence, the more they will imitate others’. This hypothesis is not confirmed at the $p \leq .05$ level, according to the available data. However, the second hypothesis, ‘the higher individuals score on social intelligence, the more they will perform anticipated actions,’ is confirmed at the $p \leq .05$ level. If an individual scores higher on the questionnaire to measure social intelligence (the Tromsø Social Intelligence Scale), that participant will anticipate the behaviour that is yet to occur more frequently.

Although the amount of imitation does not depend on the score on the Tromsø Social Intelligence scale, the amount of imitation is connected to the amount of anticipated action an individual will perform (Hypothesis 3: the more an individual imitates another person, to more they will perform imitation and anticipated action). By means of the results of the data analysis, hypothesis three is confirmed and not rejected. The amount of anticipated action is correlated with the amount of imitation behaviour displayed by the individual.

When looking specifically at Social Perspective (one of the subscales of the Tromsø Social Intelligence Scale to measure social intelligence) and the combination with imitation behaviour (imitation and anticipated action), one result is distinct and important.
If an individual scores higher on the Social Perspective subscale, that participant will anticipate the behaviour that is yet to occur more frequently. In other words, one’s amount of displayed anticipated action depends on one’s score on the Social Perspective subscale.

**Implications**

In order to determine the implications of this experiment for both the theory and the practice of social intelligence and imitation behaviour, a combination between the results and the literature is made.

Although anticipated action and imitation behaviour are two imitation phenomena that are connected (Pezzulo, Baldassarre, Butz, Castelfranchi, & Hoffmann, 2007; Verschoor, Weidema, Biro, & Hommel, 2010), there is a main difference between the imitation of behaviour that is yet to occur (anticipated action) (Michel & Valach, 1997) and behaviour that has already occurred (imitation behaviour) (Chartrand & Bargh, 1999; Hommel & Prinz, 1997; Prinz, 2005). The difference is the timing of when the imitation behaviour is displayed. Behaviour that is yet to occur is displayed before the observed individual exhibits the behaviour, while behaviour that has already occurred is imitated after the observed individual has performed a certain action. Both are forms of imitation performed by an individual, but both modulate in a different way with social intelligence.

The reason for this finding is the link between social intelligence and imitation. As social intelligence comes down to being able to understand how other people feel and being able to interact with others (Thorndike & Robert, 1920), an important factor of social intelligence is having an understanding of social situations. These findings predict how it is possible that social intelligence modulates differently with anticipated action and imitation behaviour. Anticipated behaviour, i.e. imitating behaviour that is yet to occur, demands more social insight than imitating behaviour that has already occurred. Therefore, social intelligence is more connected with anticipated action than with imitation behaviour. An individual that imitates behaviour that has already occurred does not have to understand why an individual is performing that action.
If an individual is anticipating the behaviour before it occurs, that individual does not merely have to perform the same action, but also has to guess and predict what action the observed individual will perform.

This explanation also allows us to understand why the social perspective subscale has a strong correlation with anticipated action and not with imitation behaviour. Social perspective is the ability to predict how others will feel or act in a certain social situation (Silvera, Martinussen, & Dahl 2001). As mentioned above, anticipated action calls for more social insight than imitation behaviour, and it is therefore logical that this subscale has a higher correlation with anticipated action than with imitation behaviour.

These results indicate that this experiment has found a difference in imitation between anticipated action and imitation behaviour. The results of our study suggest that there are two different ways to imitate behaviour as predicted by Genschow & Brass (2015), and that they modulate differently with social intelligence.

Earlier research has indicated that empathy is a top-down modulation for imitation behaviour. In this experiment, empathy —measured by the Interpersonal Reactivity Index— has no significant effect on imitation behaviour (nor on anticipated action or imitation behaviour). Empathy is not found to be a top-down modulation as described earlier by Chartrand & Bargh (1999), Tandney, Stuewig, & Mashek (2007) or Zajonc, Adelmann, Murphy, & Niedenthal (1987). The setting in which the measurements took place was rather artificial. The interaction occurred through a video, and there was no real-life connection between the model and the participant. This might explain why there is no correlation between empathy and imitation (anticipated action and imitation behaviour).

At the moment, no specific studies are being conducted to link social intelligence to imitation behaviour. These results introduce a new kind of thinking to the study of imitation and social intelligence, and open many possibilities for new experiments.
Further investigation

This experiment, linking imitation behaviour to social intelligence, is just the tip of the iceberg. Many more aspects of this experiment can be explored.

As is confirmed in this experiment, the amount of imitation behaviour depends on individuals’ social intelligence. It is also possible to train social intelligence in individuals with a mental disorder (Andrasik & Matson, 1985; Christoff & Kelly, 1985; Wallace, 1982), as well as in individuals without any mental disorder (Marlowe, 1985).

These aspects provide the possibility to investigate these concepts further, and to investigate whether social intelligence training could increase the imitation behaviour exhibited by individuals. Such types of training would enable individuals with a lower level of social intelligence to increase their social intelligence. Given that individuals who score higher on social intelligence have a better understanding of social situations (Riggio, 1986; Sternberg, 1985; Sternberg, et al., 2000) and display more anticipated action and imitation behaviour, they will probably have a more pleasant experience in social situations. They would be excluded from social groups less often (Williams, Cheung, & Choi, 2000), they would come to an agreement more often during discussions (Maddux, Mullen, & Galinsky, 2008), they would be considered more likeable by their interaction partners (Chartrand & Bargh, 1999), and so on. If indeed it is possible to gain insights from social intelligence training, many individuals who do not know how to behave in social interactions would be helped in these social situations. If such an experiment is conducted, it should be divided into a group receiving the training and a group not receiving the training. Splitting up the group gives us the opportunity to hold a baseline condition group that does not undergo a manipulation. Furthermore, it is then possible to divide the group even further, to make sure that no order effects can bias the experiment.

Another possibility for further investigation is the difference between female and male participants. At this point, we know that an individual with a higher social intelligence score will display more imitating behaviour.
Because of the limited amount of male participants, no conclusions on gender differences were possible, so an interesting question and follow-up experiment would be whether there is a difference in the amount of imitation behaviour between female and male participants.

Another possible course of action is to combine the results with personality factors. Extravert, introvert, emotional stability and altruism are some examples of personality factors that could be connected with social intelligence and influence the amount of imitation (anticipated action and imitation behaviour).

It is clear that many questions about the link between social intelligence and imitation behaviour remain unanswered, but the results from this experiment might provide a basis for further investigation.

Limitations and strengths

Limitations.

First there are the more practical limitations of an experimental study. A first limitation of this experiment is the relevance of the test sample. As all participants are students at the faculty Psychology and Pedagogy at the University of Ghent who had to follow a specific course of study, the results are only representative for the population of this faculty following this course. Furthermore, this sample size was rather small for a correlation study. This means that no generalizations of the test results are possible without further investigation with more generalized tests samples. Since participation in this experiment was voluntarily, the motivation of the individuals participating in this experiment can cause bias in the results. Moreover, the deviation used to collect our test sample can interfere with our test results. Perhaps only individuals who were interested in language comprehension (the cover story) —and who were motivated— participated in this experiment. Therefore, the motivation to participate is the second limitation of this experiment. Another practical limitation is the artificial situation of the video. In real life, individuals will imitate each other’s behaviour in face-to-face interactions and not in this kind of video set-up.
There may be bias on the results as the observation of imitation behaviour (anticipated action and imitation behaviour) occurred through the medium of pre-recorded video, and not in a real-time situation.

There are also other limitations influencing this experiment besides practical ones, such as the limitation of the sequence of the paradigm. Since every participant watched the exact same videos in the same order, there may be an order effect that influences the results. Another limitation of the study is the measurement of social intelligence. Social intelligence was measured, but not manipulated during the experiment. Another important limitation is the measurement of imitation behaviour (anticipated action and imitation behaviour). As there is only one observer, a bias of the counting is possible, because who determines what exactly constitutes one nose-touching, nose-wrinkling or nose-scratching action?

**Strengths.**

As this experiment links both social intelligence and imitation behaviour, a somewhat new vision is introduced. This experiment makes it possible to combine two facets of the science of psychology with each other. This opens up the opportunity to link two unattached concepts to each other.

An important strength of this experiment is the fact that it differentiates between anticipated action and imitation behaviour. Splitting up imitation behaviour into the imitation of behaviour that is yet to occur on the one hand and the imitation of behaviour that has already occurred on the other enables us to link the social intelligence scores to anticipated action, imitation behaviour or both, while also allowing us to define whether social intelligence has an influence on behaviour that is yet to occur (anticipated action) or on behaviour that has already occurred (imitation behaviour). Having every participant conduct the experiment in the exact same order allows us to interpret all the results in the same way.
A third strength in this experiment is the use of the questionnaires and the test samples. Only questionnaires tested in Dutch and found valid were used in this experiment. Therefore it is safe to say that all tests used (the Tromsø Social Intelligence test, the Interpersonal Reactivity Index and the Levenson Self-Report Psychopathy Scale) were measuring what they were supposed to measure. The fact that social intelligence was not manipulated makes it possible to analyze and interpret the results as just social intelligence, without having to wonder whether we were still measuring social intelligence.

Conclusion

This experiment, taking a closer look at social intelligence and imitation behaviour, might open many new doors for further investigation. It is clear that there is a link between the two concepts. How extensive this link is, and what the effects and the consequences are, should be studied in greater detail.
Reference list


Michel, K., & Valach, L. (1997). *Suicide as goal-directed action.*

Moss, F. A. (1926).


Wallace, C. J. (1982). The social skills training project of the mental health clinical research center for the study of schizophrenia. (J. P. Curran, & P. M. Monti, Eds.) *Social skills training.*


Attachments

1. Attachment 1: Informed consent
2. Attachment 2: Demographic questionnaire
3. Attachment 3: Questionnaire about the video
4. Attachment 4: Tromsø Social Intelligence Scale – Dutch version
5. Attachment 5: Interpersonal Reactivity Index – Dutch version
7. Attachment 7: Debriefing
1. Attachment 1: Informed consent form

INFORMED CONSENT VRIJWILLIGERS

Ik ondergetekende, ..........................................., verklaar hierbij dat ik, als proefpersoon bij een experiment aan de Vakgroep Experimentele Psychologie van de Universiteit Gent,

(1) de uitleg over de aard van de vragen, taken, opdrachten en stimuli die tijdens dit onderzoek zullen worden aangeboden heb gelezen en dat me de mogelijkheid werd geboden om bijkomende informatie te verkrijgen.

(2) totaal uit vrije wil deelneem aan het wetenschappelijk onderzoek.

(3) de toestemming geef aan de proefleider om mijn resultaten op anonieme wijze te bewaren, te verwerken en te rapporteren.

(4) op de hoogte ben van de mogelijkheid om mijn deelname aan het onderzoek op ieder moment stop te zetten. Indien ik deelneem in het raam van mijn opleiding heeft het stopzetten van mijn deelname geen negatieve invloed op mijn punten (er worden geen punten afgetrokken, maar ook niet verdiend).

(5) ervan op de hoogte ben dat ik op aanvraag een samenvatting van de onderzoeksbevindingen kan krijgen.

Gelezen en goedgekeurd op ........................................ (datum),

De proefpersoon

Faculteit Psychologie en Pedagogische Wetenschappen – Vakgroep Experimentele Psychologie
Henri Dunantlaan 2, B-9000 Gent
www.UGent.be
2. Attachment 2: Demographic questionnaire

Demografische gegevens:

Geslacht  o man  o vrouw

Leeftijd  ............

Beroep of hoogst behaald diploma:  ........................................

Ben je links of rechtshandig? o links  o rechts

Hoe is je humeur op dit moment?

heel slecht  heel goed

1 2 3 4 5 6 7
### 3. Attachment 3: Questionnaire about the video

**Vragenlijst**

Gelieve de volgende vragen te beantwoorden:

1) Wat is de lispeltuut?

______________________________________________________________________

2) Wat waren de 9 stokjes bovenop de boodschappen?

______________________________________________________________________

3) Hoe heet de broer van Leentje?

______________________________________________________________________

4) Wat deden de Stampertjes om de aandacht van de bakker te krijgen?

______________________________________________________________________

**Op welke manier zijn deze uitspraken van toepassing op jou?**

<table>
<thead>
<tr>
<th></th>
<th>Helemaal oneens</th>
<th>Helemaal eens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gedurende de <strong>eerste</strong> video had ik een onaangenaam gevoel op mijn neus.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Gedurende de <strong>tweede</strong> video had ik een onaangenaam gevoel op mijn neus.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Gedurende de <strong>derde</strong> video had ik een onaangenaam gevoel op mijn neus.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Ik kon empathizeren met de lezer in de video.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Ik kon mijzelf in de positie zetten van de lezer in de video.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Ik kon de gevoelens van de lezer in de video begrijpen.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
Hoe is je humeur op dit moment?

heel slecht

1 2 3 4 5 6 7

heel goed
### 4. Attachment 4: Tromsø Social Intelligence Scale – Dutch version

Geef bij de volgende stellingen aan in hoeverre ze op jou van toepassing zijn

(1= helemaal niet van toepassing; 7 = helemaal wel van toepassing). Omcirkel het antwoord dat het best bij jou past:

<table>
<thead>
<tr>
<th></th>
<th>Helemaal niet</th>
<th>Niet</th>
<th>Soms niet</th>
<th>Neutraal</th>
<th>Soms wel</th>
<th>Wel</th>
<th>Helemaal wel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ik kan het gedrag van anderen voorspellen</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. Ik vind het vaak moeilijk om de keuzes van anderen te begrijpen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. Ik weet hoe anderen zich zullen voelen door wat ik doe.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. Ik voel me vaak onzeker bij mensen die ik niet ken.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. Mensen verbazen me vaak door de dingen die ze doen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>6. Ik begrijp de gevoelens van anderen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. Ik voel me op mijn gemak in sociale situaties.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8. Andere mensen worden boos op mij zonder dat ik kan uitleggen waarom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. Ik begrijp de wensen van anderen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10. Ik ben goed in het aangaan van nieuwe situaties en het ontkomen van mensen voor de eerste keer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>11. Het lijkt erop dat mensen vaak boos of geïrriteerd zijn als ik ze zeg wat ik denk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>12. Ik vind het moeilijk om overweg te kunnen met andere mensen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>13. Ik vind mensen onvoorspelbaar.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>14. Ik begrijp vaak wat anderen proberen te bereiken zonder dat ze iets hoeven te zeggen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>15. Ik heb veel tijd nodig om anderen goed te leren kennen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
16. Ik heb anderen vaak gekwetst zonder dat ik het doorhad.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

17. Ik kan voorspellen hoe anderen op mijn gedrag zullen reageren.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

18. Ik kan gemakkelijk opschieten met nieuwe mensen.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

19. Ik begrijp vaak wat anderen echt bedoelen door hun uitdrukking, lichaamstaal, etc.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

20. Ik heb vaak moeite met het vinden van goede gespreks-onderwerpen.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

21. Ik ben vaak verbaasd door de reacties van anderen op wat ik doe.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>
5. Attachment 5: Interpersonal Reactivity Index – Dutch version

Geef bij de volgende stellingen aan in hoeverre ze op jou van toepassing zijn (0= helemaal niet van toepassing; 4 = helemaal wel van toepassing). Omcirkel het antwoord dat het best bij jou past:

<table>
<thead>
<tr>
<th>Stelling</th>
<th>Helemaal niet</th>
<th>Niet</th>
<th>Neutraal</th>
<th>Een beetje</th>
<th>Helemaal wel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ik dagdroom en fantaseer, met enige regelmaat, over dingen die zouden kunnen gebeuren met mij</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Ik heb vaak tedere, bezorgde gevoelens voor mensen die minder gelukkig zijn dan ik</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Ik vind het soms moeilijk om dingen te zien vanuit andermans gezichtspunt</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Soms heb ik niet veel medelijden met andere mensen wanneer ze problemen hebben</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Ik raak echt betrokken bij de gevoelens van de personages uit een roman</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. In noodsituaties voel ik me ongerust en niet op mijn gemak</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Ik ben meestal objectief wanneer ik naar een film of toneelstuk kijk, en ik ga er niet vaak volledig in op</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
8. Ik probeer naar ieders kant van een meningsverschil te kijken alvorens ik een beslissing neem  | 0  | 1  | 2  | 3  | 4  
9. Wanneer ik iemand zie waarvan wordt geprofiteerd, voel ik me nogal beschermend tegenover hen | 0  | 1  | 2  | 3  | 4  
10. Ik voel me soms hulpeloos wanneer ik in het midden van een zeer emotionele situatie ben | 0  | 1  | 2  | 3  | 4  
11. Ik probeer mijn vrienden soms beter te begrijpen door me in te beelden hoe de dingen eruit zien vanuit hun perspectief | 0  | 1  | 2  | 3  | 4  
12. Uitermate betrokken geraken in een goed boek of film is eerder zeldzaam voor mij | 0  | 1  | 2  | 3  | 4  
13. Wanneer ik zie dat iemand zich bezeert, ben ik geneigd kalm te blijven | 0  | 1  | 2  | 3  | 4  
14. Andermans ongelukken verstoren me meestal niet veel | 0  | 1  | 2  | 3  | 4  
15. Als ik zeker ben dat ik over iets gelijk heb, verspil ik niet veel tijd aan het luisteren naar andermans argumenten | 0  | 1  | 2  | 3  | 4  
16. Na het zien van een toneelstuk of film, heb ik mij gevoeld alsof ik een van de karakters was.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

17. In een gespannen emotionele situatie zijn, schrik ik af.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

18. Wanneer ik zie dat iemand unfair wordt behandeld, voel ik soms weinig medelijden met hen.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

19. Ik ben meestal behoorlijk effectief in het omgaan met noodsituaties.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

20. Ik ben vaak nogal geraakt door dingen die ik zie gebeuren.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

21. Ik geloof dat er twee zijden zijn aan elke vraag en probeer te kijken naar hun beide.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

22. Ik zou mijzelf beschrijven als een vrij teerhartig persoon.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

23. Wanneer ik naar een goede film kijk, kan ik mezelf zeer gemakkelijk in de plaats stellen van het hoofdpersonage.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

24. Ik neig ertoe controle te verliezen tijdens noodsituaties.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

25. Wanneer ik overstuur ben door iemand, probeer ik mijzelf meestal...

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>
voor een tijdje “in zijn schoenen” te verplaatsen

26. Wanneer ik een interessant verhaal of roman aan het lezen ben, beeld ik me in hoe ik me zou voelen indien de gebeurtenissen in het verhaal mij zouden overkomen

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

27. Wanneer ik iemand zie die zeer hard hulp nodig heeft in een noodsituatie, ga ik kapot

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

28. Alvorens iemand te bekritiseren, probeer ik mij voor te stellen hoe ik mij zou voelen mocht ik in hun plaats zijn

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Geef bij de volgende stellingen aan in hoeverre ze op jou van toepassing zijn (1 = helemaal niet van toepassing; 4 = helemaal wel van toepassing). Omcirkel het antwoord dat het best bij jou past:

<table>
<thead>
<tr>
<th>Stelling</th>
<th>Helemaal oneens</th>
<th>Helemaal eens</th>
</tr>
</thead>
<tbody>
<tr>
<td>In de wereld van vandaag vind ik het gerechtvaardigd om alles te doen waarmee ik weg kan komen om in mijn opzet te kunnen slagen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Mijn levensdoel is zoveel mogelijk luxe verwerven.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Zelfs indien ik mijn uiterste best zou doen om iets te verkopen, dan nog zou ik niet liegen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Ik geniet ervan om andermans gevoelens te manipuleren.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Mijn hoofdprioriteit is voor mezelf te zorgen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Ik vertel anderen wat ze willen horen, zodat ze doen wat ik wil.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Bedriegen is niet te rechtvaardigen, want het is oneerlijk ten opzichte van anderen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Ik zou overstuur zijn, moest mijn succes ten koste van anderen gaan.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Voor mij, vind ik alles waarmee ik weg kom gerechtvaardigd.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Succes is gebaseerd op de wet van de sterkste; ik bekommer mij niet om de verliezers.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Ik voel me slecht als mijn woorden of daden iemand emotionele pijn bezorgen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Mijn belangrijkste doel is veel geld verdienen.</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Helemaal eens</td>
<td>Helemaal oneens</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Over hogere waarden laat ik anderen zich zorgen maken, ik bekommer me enkel om materiaal profijt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik heb vaak bewondering voor een zeer slimme oplichting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mensen die zo dom zijn om opgelicht te worden, verdienen het doorgaans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik probeer anderen niet te kwetsen in het nastreven van mijn doelen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik verveel me vaak.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voordat ik iets doe, overweeg ik grondig de mogelijke gevolgen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik verlies snel mijn interesse in de taken die ik begin.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik ben vaak betrokken in luidruchtige ruzies met andere mensen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keer op keer kom ik in dezelfde aard van problemen terecht.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik vind dat ik in staat ben om één doel voor een lange tijd na te streven.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liefde wordt overgewaardeerd.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanneer ik gefrustreerd ben, laat ik vaak stoom af door uit te vliegen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>De meeste van mijn problemen zijn te wijten aan het feit dat andere mensen mij gewoonweg niet begrijpen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ik plan niets ver op voorhand.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
De opzet van het experiment bestaat uit twee delen. Enerzijds is er de video en anderzijds de vragenlijsten.

De video toont een meisje die een boek aan het voorlezen is. Gedurende de 25 minuten durende video zijn er enkele manipulaties. De eerste 5 minuten leest het meisje het boek gewoon voor, in de volgende 10 minuten heeft ze een soort van kriebel aan haar neus en in de laatste 10 minuten van de video gaat ze ook effectief aan haar neus krabben.

Door middel van observatie kijken we of de participant die de video bekijkt, zijn gedrag aanpast aan de video die hij ziet (meer/minder of geen effect op het imitatiegedrag). Het gedrag dat bekeken wordt is het aantal keren dat er aan de participant zijn neus kronkelt of aan zijn neus komt.

Na de video nemen we 3 vragenlijsten af. Een sociale intelligentie schaal, een empathie schaal en een psychopathie schaal.

Met die vragenlijsten en de observatiegegevens gaan we kijken of er een verband kan gevonden worden tussen de hoeveelheid imitatiegedrag en de sociale intelligentie dat iemand heeft.

Daar we geen bias willen bij het onderzoek, weten de participanten niet wat de exacte toedracht is van het experiment. We geven ze ook vragen omtrent het verhaal en delen de participanten mee dat het gaat om een onderzoek naar begrijpend lezen. Achteraf wordt de exacte toedracht van het experiment natuurlijk meegedeeld.