

Distinguishing between conformity and compliance

A multi-level approach

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Abstract

People from collectivistic cultures have been shown to conform more in an Asch-studies than people from individualistic cultures. This is thought to stem from a focus on the group in collectivists, vs. a focus on the individual in individualists. Several issues are addressed in this thesis: (i) although they are useful terms, collectivism and individualism alone cannot explain what the cognitive processes are that underlie this adjustment behaviour, (ii) it is unclear what happens in an Asch-experiment: do people learn socially or do they decide to ignore their own opinion in favour of that of the group? Recent fMRI studies show that there is an observable distinction between these two processes. Based on these findings an experiment is proposed that can distinguish between conformity and compliance. Directions for future studies are discussed.

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1. Introduction

“A small Texas corporation seeking to elevate productivity told its employees to look in the mirror and say: “I am beautiful” 100 times before coming to work each day. Employees of a Japanese supermarket that was recently opened in New Jersey were instructed to begin the day by holding hands and telling each other that “he” or “she is beautiful” “A Japanese Supermarket”, 1989, reported in Markus and Kitayama 1991.

The above reporting describes a difference in the source of peoples' self-image. The Texas employees were expected to view themselves as beautiful by affirming their own beauty. The employees of the Japanese supermarket on the other hand were expected to feel more beautiful through hearing it from other people. This indicates the value of one's own opinion for the Texas employees, and the value of others' opinions for the Japanese-supermarket attendants. This is the type of difference between groups of people that has inspired researchers for many years: why do different groups of people require different styles of social interaction to feel appreciated and secure? What is it that makes them behave differently? As this anecdote already indicates, one difference between people of different cultures is clear: some cultures rather than others are marked by a greater emphasis on groups instead of on individuals. For instance, in several Asian cultures, people assert the opinion of the group they belong to, and personal opinions are of minor consequence. These cultures have been named 'collectivist'. In western culture, this is the opposite: people can be critical and assert their own opinions, hence the term 'individualist' (Hofstede 2001). At this moment, much is known about the different values of collectivist and individualist people (e.g. work-related values, Hofstede, 1980). Many differing norms are also described (e.g. expression of emotion, Matsumoto. 2002). There is not yet a good model for the mechanism behind people adjusting their behaviour to that of the group (Matsumoto & Yoo, 2006). What process underlies the increased adjustment to the group in collectivist people?

To understand adjustment to the group, research has been done on several levels: culture, group and individual. Often, cultural differences are explained in terms of aggregates of individual opinions. However, cultural constructs, social group dynamics and individual predispositions all influence each other, and should be investigated accordingly in order to fully understand human social behaviour (Dubé et al. 2008). The goal of this thesis is to clarify how adjustment behaviour has been examined on different levels, and to suggest a first experiment that provides lucidity on the nature of adjustment behaviour.

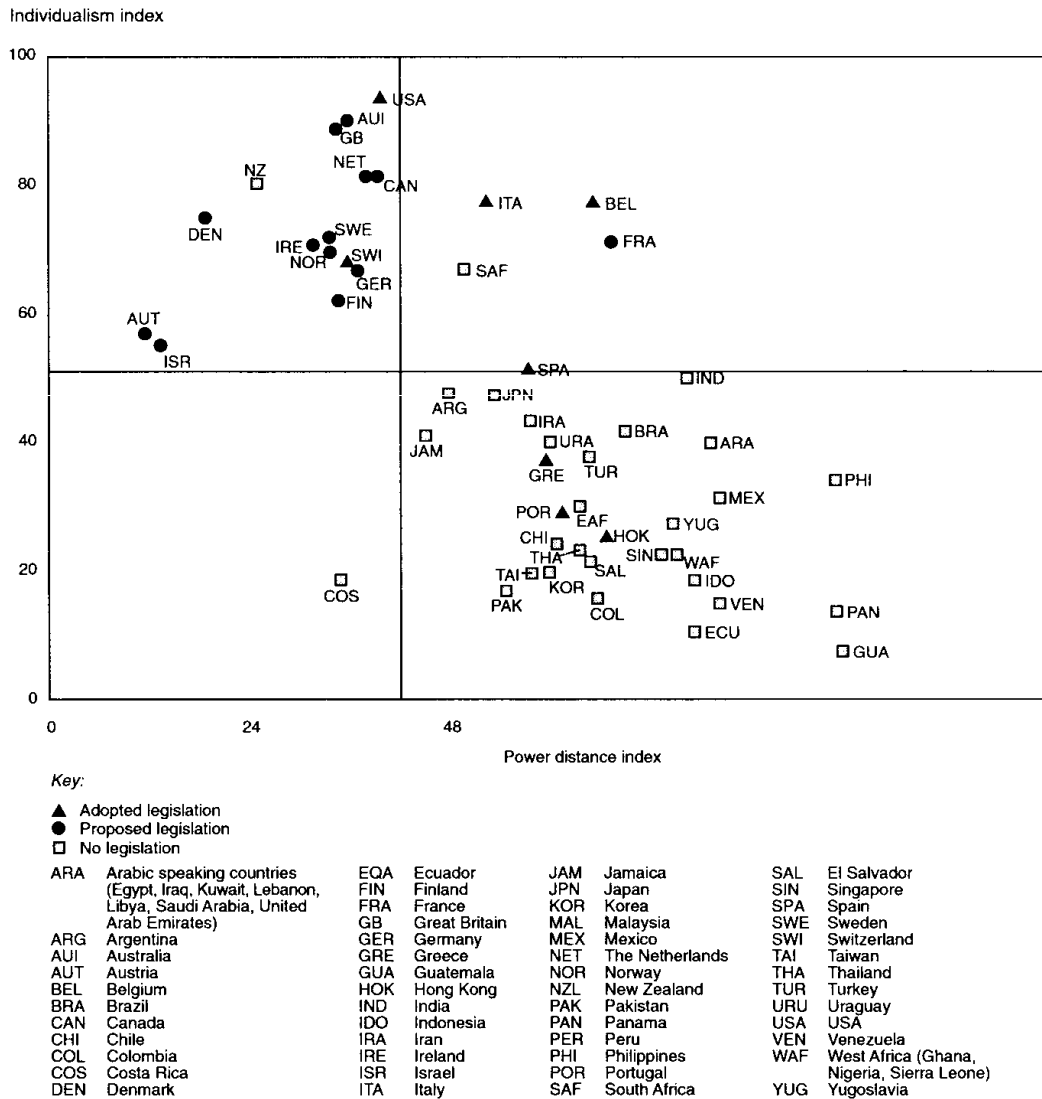
The next chapter looks more closely at the distinction between individualism and collectivism that seems to explain so many social differences, among which adjusting to the group. Chapter 3 describes the processes that are supposed to lead to adjustment: conformity and compliance. As will be explained, the terms conformity and compliance are entangled. A clarifying re-definition will be proposed. In chapter 4, I present supporting evidence from social neuroscience: two studies that describe conformity and compliance in the brain. Then, hypotheses on adjustment behaviour are derived and an experimental design is proposed in chapter 5. This experiment tests adjustment to the group in the brain of individualist people, through which it can be determined exactly what neural process underlies the increased adjustment in collectivists. Chapter 6 concludes the paper and discusses a direction for future studies that would integrate levels of human social behaviour in a bottom-up approach (cf. Dube et al. 2008).

2. Cultural differences

2.1 Cultural investigations

On the cultural level, adjusting one's behaviour to that of the group has been explained by differing social norms between cultural groups. Social norms are unwritten rules and ways of conduct that group members share and generally adhere to. They may be explicit or implicit, and capture what behaviour may be expected under different circumstances (Cialdini & Trost, 1998). Over the last century, differences between cultures in terms of social norms have been investigated intensively through observational studies (e.g. Rivers 1906, Mead 1928). The enormous amount of data that was gathered required a framework in which cultural differences could be understood in terms of cultural dimensions producing differences (Matsumoto, 2006).

Hofstede (1980) developed such a framework. In a long-term study he used questionnaires developed for the work-environment which asked about participants' work satisfaction, perception of the work situation and personal goals and beliefs. Questions were for example: "How satisfied are you at present with the extent to which you live in an area desirable to you and your family?", "How often would you say your immediate manager is concerned about helping you ahead?" and "How important is it to you to have an opportunity for advancement to higher level jobs?" (Hofstede 2001). Results from 116.000 questionnaires from more than 50 countries indicated four dimensions, or behavioural scales, that determine a countries culture: power distance (or steepness of hierarchy), uncertainty avoidance, individualism and masculinity. Each culture can be placed on the scale of each of these dimensions (figure 1: individualism vs. power distance). By understanding a cultures' placement on the scale, many prevalent attitudes in the culture can be explained.



Source: Hofstede (1991, p. 54)

Figure 1: Countries plotted for measure of individualism vs. power distance. Y-axis: individualism on a scale of 0 to 100% (0% individualism = 100% collectivism). X-axis: power distance (steepness of hierarchy) on a scale of 0 to 100%. (Walczuch, Singh, & Palmer, 1995).

2.2 Individualism/Collectivism

Of Hofstede’s four dimensions, especially the dimension of individualism has been exhaustively researched in combination with its other extreme: collectivism. The original definitions of individualism and collectivism were as follows: “*Individualism stands for a society in which the ties between individuals are loose: Everyone is*

expected to look after him/herself and her/his immediate family only. Collectivism stands for a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty." (Hofstede, 2001, pp.225). This has been re-
verbalized in the literature as focus on oneself in individualism, as opposed to a focus on one's group members in collectivism (Berry, Poortinga, Segall, & Dasen, 2002).

Many more cultural differences have been ascribed to the individualism/collectivism scale. For instance, much focus has been on how individuals perceive themselves. In individualistic cultures, people have an independent self-construal: they see themselves as stable entities that are separate from other people and emphasize their own abilities. Contrary to that, in collectivistic cultures people have an interdependent self-image: their self-image is flexible to external circumstances and they emphasize fitting in with others (Singelis, 1994; Markus & Kitayama, 1991). There is also a difference in the values that are held in different societies. In individualistic societies, personal goals take precedence over goals of the group. It is an accepted decision that a person may leave family and friends if a good opportunity for self-development is offered elsewhere (Triandis, McCusker, & Hui, 1990). In collectivistic cultures, the goal of the group is more important than that of the individual, and self-sacrifice is expected if necessary. (Hofstede, 2001). Individualists value freedom and individual right while collectivists value harmony with the group and responsibility towards the group (Kim & Markus, 1999).

With the use of the individualism/collectivism dimension, cultural norms can be described as stemming from the respective values and views on the self that people from different cultures have in common (Matsumoto & Yoo, 2006). For instance, the differences in communication styles can be understood on a deeper level. Communication is direct and plentiful in individualistic societies: one can say "no" to a request and children are taught to deal with constructive criticism. Silences during conversation are uncommon, and small talk fills the gap even if the subject is uninteresting to the conversationalists. In collectivistic societies communication is indirect to the extent that one western researcher wrote: "they 'read each other's minds'" (Singelis, 1994). People do not say "no" but state non-compliance with "we shall think about it" or a similar phrase. It can happen that family is warmly

welcomed to the house, after which no more is said, but the family sits with each other in silence (Singelis, 1994; Hofstede, 2001). These differences seem to be linked to underlying values. In individualistic societies, the self is unique and important. Therefore communication of personal views is frequent because people do not assume to understand the unique other without discussion. In collectivistic societies the values of harmony in the group and similarity with others are more important. Since others are similar to the individual, direct communication is not absolutely necessary. People assume similar opinions in others since they themselves adjust their opinion to those of others (Hofstede 2001).

Another salient difference between individualism and collectivism is the level of conformity (Schwartz, 2009; Kim & Markus, 1999). The term conformity generally indicates adjustment of one's behaviour to that of the group (Cialdini & Goldstein, 2004). In a cross-cultural meta-analysis it was found that collectivistic cultures show higher level of conformity than individualistic ones (Bond & Smith, 1996). The primary value of harmony, or getting along with the group seems to cause more adjustment to the group (Bond & Smith, 1996; Berry et al., 2002). Individualistic cultures probably display less conformity because people are held personally accountable for their decisions. It has been shown that personal responsibility for accurate decisions decreases adjustment to the group (Quinn & Schlenker, 2002).

The dimension of individualism/collectivism seems to be able to explain many differences between cultures. It is therefore not surprising that the terms have also been used in many other fields, for example in developmental psychology, personal psychology, political science and management (Berry et al., 2002; Hui & Yee 1994; e.g. Triandis & Gelfand, 1998; Rego & Cunha, 2009; Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose, 1999; Fukushima, Sharp, & Kobayashi, 2009; Goncalo & Staw, 2004; Hornsey, Jetten, McAuliffe, & Hogg, 2006; Lewis, Carrera, Cullis, & Jones, 2009).

2.3 Criticisms on the use of the dimension

The individualism/collectivism dimension has been used to explain perhaps too many cultural differences without much critical evaluation (Kâğıçbaşı, 1994; Hui & Yee, 1994). One problem that is often overlooked is about the assumptions made in most

cross-cultural research. Generally, experiments have been done by self-report, asking participants how they feel about certain issues or what they think is important in their work or private life, after which analyses are performed on aggregates of answers (e.g. Singelis, 1994; Hofstede, 2001; Hui, 1988). However, this method may not fully capture the traits of a culture because it assumes a causal link between a person's personality traits and his behaviour, regardless of situation and context. This may be a wrong assumption and should be tested (Choi, Nisbett, & Norenzayan, 1999; Oyserman & Sorensen, 2009).

A related problem is that the individualism/collectivism dimension itself does not provide a mechanistic explanation, but indicates sets of co-varying cultural traits. The terms are a "catchall": high-level concepts that emerge from the literature and explain all kinds of social behaviours (Kâğıtçıbaşı, 1994; Hui & Yee, 1994; Fijneman, Willemsen, & Poortinga, 1996). The original definitions were in terms of values, and have been used to explain other values and behavioural norms. This paradigm has provided many insights but it can take knowledge no further than the values level. There is a need for explanations that link cultural differences to specific sources that cause these differences (Matsumoto & Yoo, 2006).

Many findings support the notion that the context of the situation is very important for social behaviour. Some examples: Chinese Canadians that are questioned in Chinese answer in a more collectivistic manner than when they are questioned in English (Ross, Xun, & Wilson, 2002). Japanese students, who are commonly thought of as highly group-oriented, were shown to abandon a work group more often than Americans in the absence of social monitoring and sanctioning (Yamagishi, 1988). Moreover, people can be primed for specific cultural styles: Gardner, Gabriel and Lee (1999) gave their participants a text in which they were asked to circle all pronouns. Participants were in either the individualism condition where all pronouns were independent ('I', 'me') or in the collectivism condition where pronouns were dependent ('we', 'ours'). Results showed that collectivist participants in the individualistic condition endorsed individualistic values after priming, and vice versa for individualistic participants (Gardner, Gabriel, Lee 1999). These findings indicate that the context in which a person answers a questionnaire, and also the context in

which a person lives, are very important to understanding culture (Matsumoto & Yoo, 2006).

2.4 Taking context into account

As an alternative (or addition) to self-report, it has been suggested that research should also be conducted at the level of the cultural structures that enable or cause differences between individualistic and collectivistic societies (Oyserman et al., 2002). For instance, in an individualistic culture, rules and incentives may be focused on the individual, making individualistic values and norms salient. A collectivistic culture may have incentives that push people towards the collectivistic norms; the organization of a culture may prime their members (Oyserman et al., 2002). Still, the cultural products were developed by the individuals of that culture, thus cultural products and the mind of the individual shape each other. Therefore it is relevant to cultural research to investigate the cultural products that are “outside the head” (Morling & Lamoreaux, 2008; e.g. Han, 1994; Kim & Markus, 1999).

In a meta-analysis of studies using song lyrics, TV ads and religious texts, it was found that the cultural products of (mostly) America were more individualistic and less collectivistic than those of South Korea, Japan, China and Mexico. This concurs with the previous results obtained via self-reports, but results were even stronger (Morling & Lamoreaux, 2008; Oyserman et al., 2002). This is supporting evidence for the proposition that, even though people from so-called collectivistic countries are not necessarily more collectivistic than individuals from so-called individualistic countries (Oyserman et al., 2002), their surroundings will prime them to behave in a culturally specific manner.

This brings us back to the result from the meta-analysis on the Asch study: people from collectivistic cultures conform more than people from individualistic cultures (Bond & Smith, 1996). It might be that people from collectivistic are not necessarily more intrinsically prone to conform than people from individualistic countries (Oyserman et al., 2002). However, since they most often participate with members of their own cultures, they may be primed to behave according to their culture’s values. Once again, context is very important.

3. Conformity or compliance

3.1 The Asch experiment

As mentioned before, one of the oldest and most used experiment for investigating conformity is the line judgment task, or Asch-experiment (Asch, 1955). In the Asch experiment, a participant is led to believe he takes part in a group experiment, when in fact only the participant is being tested. The group is presented with two cards: one has one line, the reference line. The other has three lines of different length, and one of these is the same length as the reference line (figure 2). The confederate researchers (or actors) are sequentially asked which of the three lines is the same length as the reference line is. The confederates unanimously name the wrong line, one that is not the same. Last the participant is asked which line is the right line. If the participant now names the actual right line, he is not conforming, if the same line is named that the confederates named, the participant has conformed (Asch, 1955).

Many people have raised the question of how well the Asch experiments really test conformity, including Asch himself (1955). It may be that participants really comply, i.e. responding the way they perceive is required, without changing their private opinion (Asch, 1955; Nail, 1986; Bond & Smith, 1996)

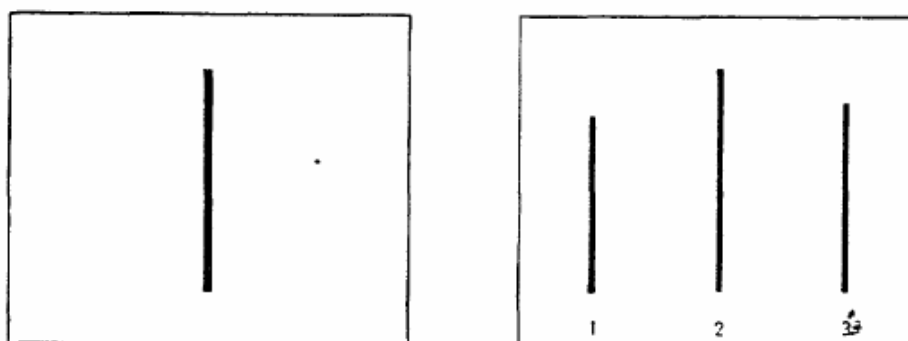


Figure 2: Stimulus set for Asch – experiment on conformity. Left: the card with the reference. Right: the card with three numbered lines. Both cards are shown to the participants and the question is asked: “which of these lines has the same length as the reference card?” (Asch, 1955).

3.2 Conformity

According to social psychologists, conformity is adjusting one's behaviour to that of the group (Cialdini & Goldstein, 2004). This can be because a person wants to be right or behave properly, and sees the opinion of the group as an indicator of accuracy (informational conformity), or because the person does not want to be excluded from the group (normative conformity, Deutch & Gerard, 1955). When the goal is accuracy, a person will be more tended to conform when the situation is unclear (Grieve & Hogg, 1999). When the goal is fitting in with the group, there is a greater tendency to adjust opinion to those of the group when a video is shown of someone being ridiculed by others (Janes & Olson, 2000). One interesting effect of wanting to fit in with the group is a type of conformity called behavioural mimicry (Chartrand & Bargh, 1999). Behavioural mimicry is employed by a person when subtle social cues of another person are matched with similar cues, like facial expression, body posture and mannerisms. The person that is mimicked often likes the mimicker better. This type of behaviour seems to take place entirely outside of conscious awareness of the person who does it (Chartrand & Bargh, 1999).

In their review paper, Cialdini and Goldstein (2004) bring to the attention that the abovementioned behaviours, though all called conformity by social psychologists, may not all be the result of same behavioural process. Although the outcome of the behaviour is always adjustment to the group, the motivations can be different (accuracy or fitting in). Moreover, the level of intentionality can be different: conforming to the group's opinion because one is afraid to be laughed at may be a very conscious and strategic decision, whereas behavioural mimicry is stated to be completely outside of the conscious awareness.

3.3 Compliance

The same basic motivations that lead to conformity can also lead to compliance: the desire to have the right information about the situation, wanting to behave correctly and wanting to be liked. The distinction between the two terms lies in the nature of the social situation: compliance is described as silently agreeing to a request, or: acquiescence (Cialdini & Goldstein, 2004).

Compliance has been studied in economic games (e.g. Fehr & Gächter, 2002; Herrmann, 2008; Spitzer, Fischbacher, Herrnberger, Gron, & Fehr, 2007). In these games, participants play in order to win money. Often they have to work with each other by donating some money to gain goods owned by all, which results in a higher personal gain if enough participants contribute. Participants can punish their fellow players by taking away some of their winnings, thus enforcing a group norm. Often players are punished for not contributing enough, but sometimes players are punished for contributing too much, depending on the group norm (Gintis, 2008).

People also said to comply with requests if they feel some sort of positive connection to the person making the request. Often family and friends can make requests and be fairly certain of compliance (Cialdini & Goldstein, 2004), but also strangers can receive compliance if they are liked by their targets (Burger, Soroka, Gonzago, Murphy, & Somervell, 2001).

On an interesting sidenote, many sales techniques are based on compliance. For example the “Anxiety-than-Relief” technique in which the target is scared at first. Then the danger is abruptly taken away, immediately after which the target will be ready to comply to much more than without the preceding anxiety. It is believed that the relief of anxiety temporarily inhibits critical thinking because the target is focusing his attention on what just happened, and will respond in an automatic way (Dolinsky & Nawrat, 1998).

Again, we see here incongruence in the different uses of the term compliance. In economic games, a player may comply because of a strategy: adjusting to the group-norm results in a high profit. A person may comply if he wants to fit in with a group. If a person feels an emotional closeness to another, the other person may expect relatively high levels of compliance to a request. These behaviours may be non-consciously executed, or result from strategic decision making. Moreover, even other mental processes may be at play: the distractedness that is used in sales-tactics might be a different process altogether.

3.4 Suggesting a difference

Since the terms conformity and compliance are ambiguous, they are not practical to work with if we want to investigate human behaviour on different levels (individuals, groups and cultures) and in different contexts (with family vs. strangers, with colleagues vs. customers). Therefore a clear distinction between the terms and between different social responses should be made. Note beforehand that not all mental processes described above can be captured in two terms, but I will address the most important ones.

I suggest that the main difference between the behaviours and processes discussed here is in the level of strategising. Most conformity seems to involve a non-conscious processes; people learn socially from each other and no strategy is involved. Most instances where compliance is mentioned, strategic thinking is employed: a conscious decision to adjust one's behaviour to what is expected. I believe that these different forms of adjusting one's behaviour should be distinguished on the level of the neural processes that underlie them (see also Adolphs, 2003; Boone, Declerck, & Suetens, 2008; Nail, 1986).

3.5 Investigating behaviour in the brain

In both cases of conformity and compliance, a behavioural adjustment to a social norm takes place. This requires signals in the brain that relate to detection of the social norm and to deviations from the norm (Montague & Lohrenz, 2007). In order to fully understand how individuals process a stimulus like a social norm and respond with a behaviour, probably the most detailed method available at the moment is functional magnetic resonance imaging (fMRI). The precise processing of an individual engaging in social behaviour can be investigated, like many other behavioural phenomena have been explained such as aspect of perception, attention and memory (Cacioppo & Berntson, 2002). The field of social neuroscience can inform that of cross-cultural psychology and social psychology, by investigating exactly how social behaviours come to be displayed.

4. Adjusting behaviour in the brain

4.1 Conformity in the brain

A recent study investigated conformity in the brain (Klucharev, Hytonen, Rijpkema, Smidts, Fernandez, 2009). In this experiment, participants were shown 222 female faces while they were in an fMRI scanner. They were asked to rate them for attractiveness on an 8-point Likert-scale and immediately following the face, participants were shown the “average European rating” of that face on the same 8-point Likert-scale. After rating all the faces, participants were taken out of the scanner and set to work on an unrelated behavioural task. After 30 minutes they were unexpectedly asked to rate the 222 faces again in random order, without the presentation of the “average European rating” and without being scanned.

In this experiment, the participant’s rating could have been lower or higher than the average European rating, which is a social conflict. If this happened, participants could give a second rating that was the same as the first rating, which means the participant did not adjust their opinion to that of the group. Participants also could give a second rating that was more towards the opinion of the group, which the researchers had previously defined as conformity to the group. Also no social conflict could occur when the participant’s rating was equal to the average European rating.

The results from this study showed that experiencing a social conflict activated the rostral cingulate zone (RCZ) and deactivated the nucleus accumbens (NAc) (figure 3). A large change in activation (or deactivation) when a social conflict occurred predicted adjustment to the rating of the group in the participants’ second rating. A small change in activation (or deactivation) predicted no adjustment: the participant gave a second rating that was the same as the one initially given.

The RCZ was previously shown to be involved in detecting a high probability of not achieving or obtaining a predicted goal, unless the cognitive behavioural process is altered (Ridderinkhof, Ullsperger, Crone, & Nieuwenhuis, 2004). The strength of the activation in the RCZ was also shown to predict the magnitude of subsequent change of behaviour (Cohen & Ranganath, 2007). This indicates an important role of the

RCZ, namely preventing errors. The substantia nigra and the ventral tegmental area, both part of the NAc, were previously shown to be stronger activated by an unpredicted reward than by a predicted reward, and to be de-activated when a predicted reward was not received at the expected time. This indicates a role in reinforcement learning (Hollerman & Schultz, 1998).

Combining these findings with the results of Klucharev and co-workers, the RCZ and the NAc combined are indicated to produce prediction error signals and subsequent adjustment of behaviour both in social and non-social situations (figure 4). This is achieved through reinforcement learning and is done without thought of strategies. I assert here that this is a non-strategized way of adjusting behaviour.

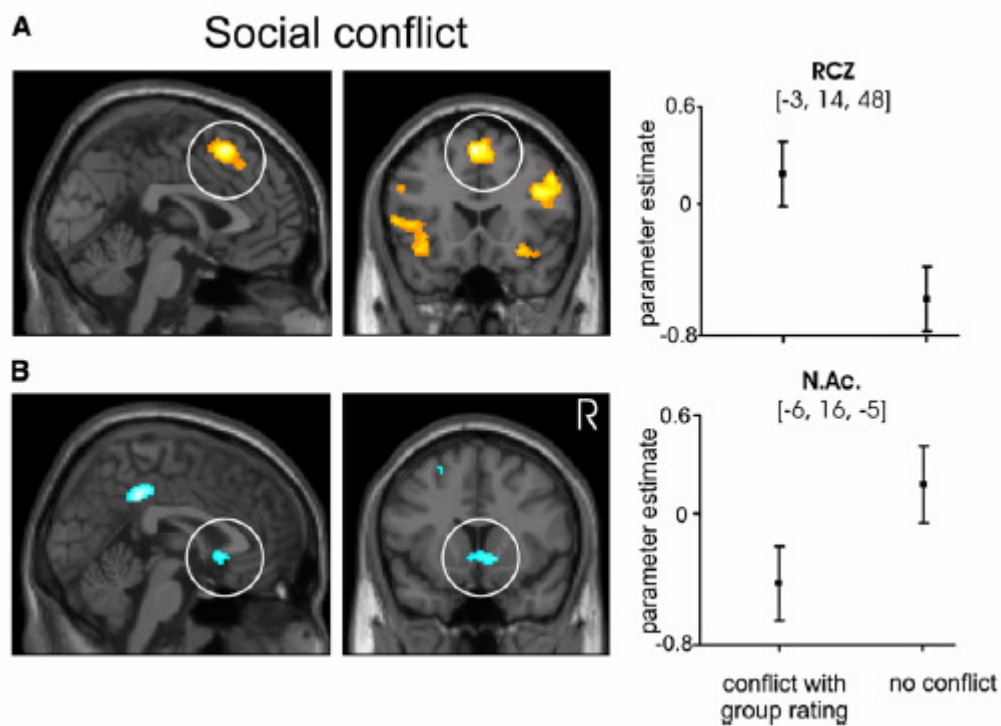


Figure 3: Detection of a social conflict. A(right): increased activation of the rostral cingulate zone (RCZ) when social conflict is detected, compared to when no social conflict is detected. A(left): z-maps that show increased activation of the RCZ when social conflict is detected (no z-map is shown for no social conflict). B right: decreased activation of the nucleus accumbens (NAc) when social conflict is detected, compared to when no social conflict is detected. B left: z-maps that show decreased activation of the (NAc) when social conflict is detected (no z-map is shown for no social conflict). From: Klucharev et al., 2009.

Conjunction of *conflict & conformity*



Figure 4: Social conflict and conformity activate the same brain structures. Conjunction analysis of social conflict and conformity show that they are processed in the same areas. Left: the rostral cingulate zone. Right: the nucleus accumbens (Klucharev et al. 2009).

4.2 Compliance in the brain

Compliance in the economics' definition (i.e. behaving according to the norm under threat of punishment) has also been examined in the brain (Spitzer et al., 2007). In their experiment, Spitzer and co-workers devised a game in which two anonymous participants play a single game against each other. One participant (A) was placed in an fMRI scanner, the other (participant B), was not, and was replaced with a new participant B in each trial. In the control trials of the game, A was given 100 money units, which participants were told beforehand was worth money at the end of the experiment. Participant A was then told to distribute the units at will between both participants. B could not interact with A, thus B was a passive recipient. In punishment condition trials of the game, A was again given 100 money units to freely distribute, but now both players were given an additional 25 units. After being informed about A's distribution decision, B could now punish A; for each unit that B handed in, A's total units was reduced with 5 units. Hence, if B wanted to punish A severely, for the price of all 25 units A's total units could be reduced to 0 (25x5).

Results showed that when punishment was possible, participant A distributed the money units more evenly among himself and B than in the control condition. The increase in 'fair' behaviour was paired with a significant increase of activation in A's dorsolateral prefrontal cortex (DLPFC) and ventrolateral prefrontal cortex (VLPFC). These areas have been shown to be involved in inhibition of impulses, in an executive function (Aron, Robbins, & Poldrack., 2004). The tendency to choose the short-term selfish option -in this case A keeping all the units- is the initial impulse (Knoch,

Pascual-Leone, Meyer, Treyer, & Fehr, 2006). Activation of the DLPFC and the VLPFC, while simultaneously A gives B a 'fair' portion, indicates an inhibition of the selfish response.

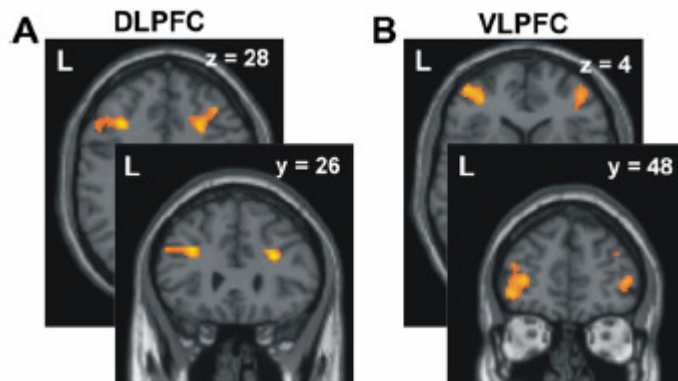


Figure 5: Activation of the DLPFC and VLPFC when deciding during punishment condition. Participant A shows activation of the DLPFC (A) and VLPFC (B) during the decision phase in the punishment condition. (Spitzer et al. 2007)

4.3 Hypotheses

These neurological studies affirm the distinction between adjustment behaviours as non-conscious social learning and strategic thinking. Conformity was defined as simply adjusting to the behaviour of the group, which is a social learning event. In the brain this was affirmed: the RCZ and NAc were activated, which play a role in reinforcement learning. Compliance was defined as adhering to a norm under threat of undesirable consequences, which is a strategic decision. This behaviour has been shown to be related to the DLPFC and VLPFC, which are involved in strategic executive decision making. Thus: even though in behavioural studies one cannot distinguish between adjustment of behaviour because of conformity or because of compliance, these two processes are demonstrably different on a neuronal level.

This combined information gives us the possibility to answer the following question: is the high level of harmony in the group that is found in collectivism characterized by compliance or conformity (or both)? To investigate this question, I propose that an Asch study can be done while participants are in an fMRI scanner, to see which areas are activated when they adjust their behaviour to that of the group. I expect that

participants from collectivistic countries agree more with the group than participants from individualistic cultures, as has been found with the meta-analysis in Asch studies (Bond & Smith, 1996). Participants from individualistic countries usually tend to state their own opinion rather than others' opinion. Therefore when individualists do agree with the group I expect a higher percentage of conformity than compliance. I have no expectancy for if people from collectivistic cultures more often comply than conform, and it is this question that is most interesting to answer.

It might be interesting to test, as an extra measure, the type of view on the self the participants have. In theory, having a collectivist or individualist self-construal should not matter very much since participants will be in a group situation, and thus will behave as they think is socially acceptable. If however being in a group turns out *not* to be enough to make people disregard their view of self, and no effect for different cultures is found, we can do the analysis on different views on the self instead of on culture. For this goal, participants should take the Singelis (1994) questionnaire on self-construals, some time before or after doing the fMRI study (to prevent accidental priming of collectivistic or individualistic values).

The following hypotheses can be addressed:

H1₀: collectivists show significant activation of the RCZ and NAc, suggesting conformity drives adjustment to the group.

H1_A: collectivists show significant activation of the DLPFC and VLPFC, suggesting compliance drives adjustment to the group.

H2_A: collectivists agree significantly more with the group in an Asch study than individualists cultures.

H3_A: individualists that agree with the group in an Asch study, show significantly more often conformity than compliance.

5. Methodology

5.1 Procedure

Participants must be chosen from collectivistic and individualistic cultures. In self-reports and in cultural products tests, Americans have been shown to be individualistic and South Koreans have been shown to be collectivistic (Hofstede, 2001; Morling & Lamoreaux, 2008). Participants should be recruited from these countries.

In stage 1 of the experiment, participants should take the self-construal questionnaire developed by Singelis (1994). This can be done via e-mail.

Stage 2 takes place at least a couple of days later, so that participants have forgotten the questionnaire. Participants should be invited to a research facility for experimentation. At the facility, they should be seated in a waiting room with the “other participants”, which are research confederates with the same cultural background as the participant. It might be important for the group process that they sit in the room for a while because they will not see each other while they are in the scanner.

Then, they should be lead into the chamber with, preferably, enough scanners for all participants in order to make the experience of being a group as realistic as possible. The confederates’ scanners might be replicas.

Then, participants take part in the Asch experiment, with the lines being shown on a video screen. Responses should be vocalized for realistic experience.

5.2 Analysis

First of all, Koreans are expected to agree more than Americans (hypothesis 2). If Korean participants did *not* agree more often than Americans, the analysis should be done only with the answers of the Singelis questionnaire. In that case, comparison will be between stable self-construals (individualists) and contextual self-construals (collectivists).

Four structures in the brain are most important: the VLPFC, DLPFC, the RZC and the NAc. These four structures must be observed when the participant hears the answers of others to the point where he says his answer. If the first two are more activated than

the second two, a participant made a strategic decision when answering (compliance). If the second two were more activated, a participant was learning socially what the right answer was (conformity). These patterns will answer hypothesis 1.

In the subset of agreements with the group, the frequencies of conforming vs. complying have to be determined within cultural groups. This will answer hypothesis 3A. After comparing the cultures, interaction effects might be examined between culture type and self-construal type.

6. Conclusions

If it is understood how individuals from different cultures process social information and determine how to respond, from there social behaviour can be synthesized. Adjustments to the group that come about through activation of the RCZ and NAc are instances of social learning: the individual is learning 'correct' information. If adjustment to the group happened when the VLPFC and DLPFC were active, the individual was responding in a strategic way. The first is internalization of information, the second is not (e.g. Nail, 1986).

The knowledge of how individuals come to adjust to the group will elucidate the nature of this behaviour. Most likely, adjustment behaviour will be caused by different processes in different contexts; such as social learning when family is involved, but strategizing if money can be gained by cooperating with strangers. This experiment only tests one possibility of many, but still it will be interesting to see how collectivists like Koreans come to display the behaviours they do.

It might be that collectivists and individualists show the same ratios of compliance vs. conformity when agreeing with the group in the Asch experiment. Fijneman and colleagues' study (1996) showed that there is not much difference in between cultures when it comes to distributing a sum of money between people. It is mostly the expectancy of the behaviour of those prospective others that determine a persons' willingness to give. This indicates that it might well be that people in collectivistic cultures expect others to comply, and therefore comply themselves. Perhaps they are no greater conformers than individualists, but their surrounding primes them to a higher level of compliance (Morling & Lamoreaux, 2008; Oyserman et al., 2002).

One last point on collectivism and individualism needs to be made. To people from different cultures, conformity may implicate behaviours with different emotional valences. Individualistic cultures positively value self-expression and personal goals, or uniqueness. To individualists, conformity opposes uniqueness, giving conformity a negative valence. To illustrate, one western researcher described the necessity for

group members to adjust their behaviour to that of the group, in order to survive and achieve their goals. He then continued: “*The dark side of conformity is embodied in Asch’s (1952, 1956) famous studies that examined the powerful pressures groups exert on their members to yield to false standards.*” (Mann, 1988, pp. 184, emphasis added). To this western researcher, conforming is only positive if there is something to be gained by conforming. In collectivist cultures this is exactly the opposite: group harmony is valued, so conformity has a positive valence with its opposite being deviance. Conformity in different people may result from different motivations, and maybe through different processes (Kim & Markus, 1999; Hui & Yee, 1994). The positive and negative valence may also be neurologically related why people conform or non-conform. This may be another line of research: do people feel good when they adhere to their group’s norms? I.e. is positive valence coupled to conforming in collectivists, and to non-conforming in individualists?

In a broader scope, Adolphs (2003) distinguishes between emotional or motivational social responses and higher-level abstract thinking that make strategizing possible, and links these processes to different sets of regions in the brain. Then he suggests that there might be a necessity for new terms that more accurately describe behaviours, so that they reflect the neural processes that underlie the behaviours. At the end of his paper the question is raised if large-scale social behaviour, such as politics and economics, can be understood by studying social processing in individuals. With this paper I hope to have made clear that I believe this is indeed possible, and that it would clarify understanding of human social behaviour on more than one level.

With the information from the study proposed here and many future studies that bridge gaps in our knowledge, we could start to understand what way our behaviour shapes culture, and how culture affects social behaviour. Coming from a different field of study, namely that of marketing, Dubé et al. (2008) propose the “brain-to-society” model (figure 6). When it comes to human decision making from the vantage point of the individual, two processes seem to both pull a decision towards one side or the other: a fast gratification or a strategic decision. However, one cannot look only at individual processes in terms of biological drives (which call for fast gratification) and executive control processes (for making strategic decisions). Both processes are

bound to be influenced by the context in which the decision has to be made, e.g. long-term environmental influences, short-term cues, or timing. As Dubé and colleagues argue, it is therefore important to investigate individual decision making in combination of the opportunities and constraints the environment gives. For this goal, agent-based modeling may be used because it provides an analytical platform in which the long-term dynamic interactions between the individual's state and its environment may be investigated (Hemelrijk & Kunz, 2003). With aid of this tool, we can start to understand how a process within an individual may cause a cascade of changes throughout the system and eventually influence a process on the cultural level.

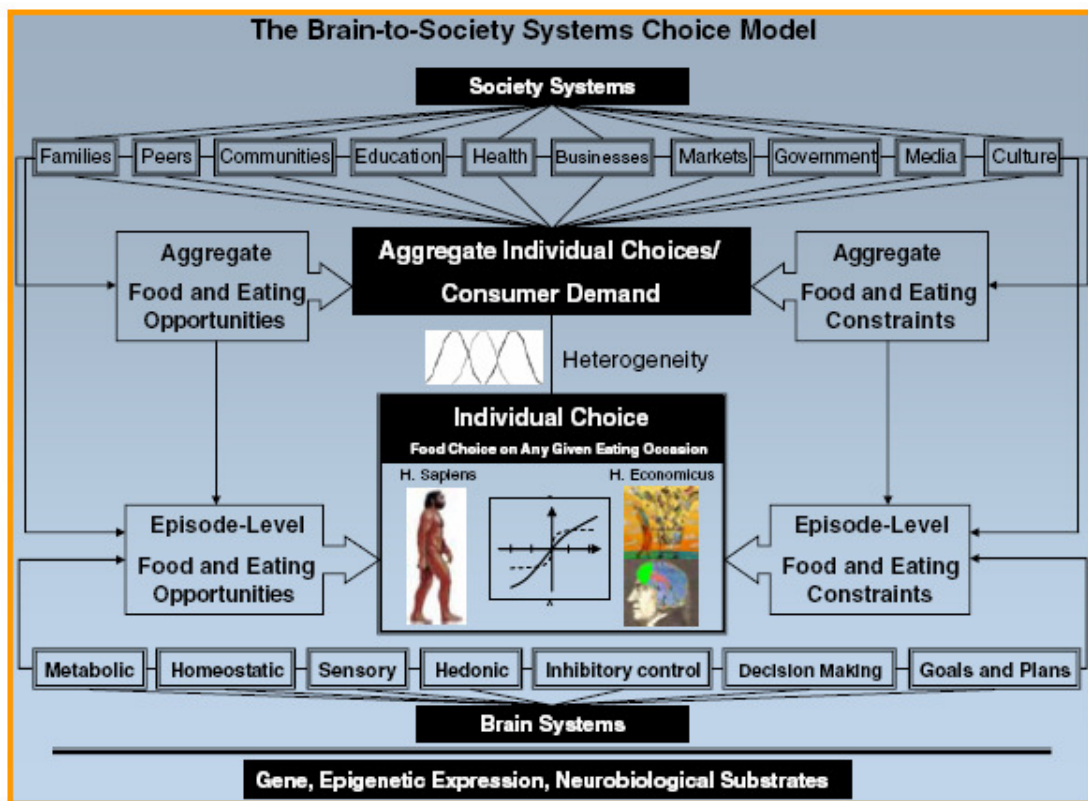


Figure 6: the “brain-to-society” systems choice model. This model proposes to incorporate all internal and external influences on the choices of people, in this case choices on eating. Research on all levels may be incorporated using agent-based models (Dubé et al., 2008).

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