# Social synchrony in the classroom

*We all have an underlying biological drive to associate positively with people who form part of our in-group and to unconsciously develop negative feelings and behaviours towards those in an out-group. Through education and learning, however, we can change this response.*

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Executive summary

- Social and neural synchrony between members of a group is associated with shared behavioural and emotional states. These shared states both result from and further reinforce positive social interactions between group members that lead to positive group attitudes and behaviours.

- As humans, we have an underlying biological drive to associate positively with people who form part of our in-group, but conversely can unconsciously develop negative feelings and behaviours towards others we might associate with an out-group. Although we have these unconscious drives, we can also consciously reflect on and control our choices and behaviours to act in more positive prosocial ways.

- Educators should be aware of these conscious and unconscious factors that drive social interactions and group behaviours. Fostering a positive social culture within the classroom, modelling positive prosocial behaviours, and being aware of and avoiding arbitrary divisions that can lead to in-group versus out-group biases will create a sense of group belonging and safeness amongst learners that will enhance the teaching and learning experience.

The classroom as a social environment

The classroom is a dynamic, highly social environment, with the quality of social interactions dependent on the relationships that exist between students in the class, and between the teacher and the students. With knowledge of the importance of relationships, emotions, and empathy, the social environment of the class can be moulded to enhance a range of cognitive, emotional, and social outcomes for both students and the teacher.

When students are placed in a class they become a *group*. The people within that group, and in particular the teacher, can influence the ideas, feelings, and behaviours of other individuals within the group. If the group shares these ideas, feelings, and behaviours thoughtfully then the group will feel more connected, will be more agreeable, and this will mean they will be more cooperative, experience more positive emotions, and will be more likely to achieve success. They will be more motivated to engage in the learning experience as they begin to see the goal for the group of which they feel part. (Refer to ref. [1] for more information on group processes in the classroom.)

When individuals interact with one another and feel this shared sense of connection, they tend to coordinate their actions so that the acts of one support the actions of another to achieve the goal of the group. This is a process known as *social synchrony*[2]. Social synchrony allows us to connect with a group on a broader scale, not just one-to-one, which is particularly important in a classroom environment.

When we interact with another person, we have both conscious and unconscious responses to the person and the interaction, and these responses determine how connected we feel with that person. For a teacher, making a positive emotional connection with a student demonstrates to the student that the teacher understands what they are thinking and feeling, and this increases the student's sense of belonging, of trust in and respect for the teacher. The student feels safe in the interaction, which is essential if they are going to take academic risks and attempt challenging work. A social and emotional connection motivates the student to be engaged with whom they are learning, which will enable them to then become engaged in what they are learning and how they are learning it. (Refer to ref. [3] for more information on the role of social synchrony in collaborative learning.)

The psychology of group behaviour

We live in a highly social world and interpersonal social interactions are a constant and crucial part of our everyday life. As such, there is a long history in psychology of studying the effects of social groups on human behaviour.

People are very quick to take on group attitudes and to start behaving in ways that are consistent with their perceived expectations of the groups of which they are a part. Some theories emphasise that this conformity to group roles is an essential part of forming and maintaining our personal social identity[4]. Others point to biology, suggesting that we have evolved with particular biological drives that promote advantageous social behaviour within groups[5].

Whether psychology or biology, it is clear that there are unconscious influences on our behaviour that make us more likely to behave in particular ways when we are part of a social group. Understanding these unconscious drives on our behaviour is crucially important to understand how we might promote positive social behaviours and actions between groups and group members. However, it is also important to be aware of how group expectations can unconsciously influence the dysfunctional behaviour we see, especially in environments where the behaviour is heavily hierarchally driven.

One extreme example of how readily people will start to act according to group expectations, sometimes even against their own personal conscience or sense of morality, is evident in the now infamous *Stanford Prison Experiment*[6]. Here, mock police cars took university student volunteers to a mock prison in the basement of a Stanford University building, and the students were randomly allocated to be either prisoners or guards. Very quickly, some of the guards began to act in highly authoritarian ways and even began to subject some of the prisoners (in reality their co-student colleagues) to psychological abuse. Even some of the prisoners began to accept the abuse and to actively try to suppress other prisoners who objected to the abuse. The forcefulness of these group behaviours, by both prisoners and guards, was unexpected and the experiment was discontinued after only a few days.

A prominent theory as to why we will so readily form group associations and act in ways appropriate to those groups is *social identity theory*[7,8]. By this theory, one of our primary goals in our behaviours, thoughts, and actions is to maintain a positive self-identity. We do this by forming associations with people who share particular characteristics with us that we view positively, thereby maintaining a positive self-identity as a member of that group. Such characteristics can be explicit distinctions such as gender, age, religion, race, or can be arbitrary divisions such as school house teams or "prisoners" versus "guards" in a psychology experiment.

For example, a child may say, "I'm strong because I'm a boy" or "I'm good because I'm on the *red* team and the *red* team is the best." By this, the child can maintain their positive self-identity (as a strong person) by association with the group with which they perceive that positive characteristic (boys or the *red* team).

A consequence, however, is that we also form negative associations with people and groups who do not share those characteristics and we perceive them in overly negative ways. This is also a way of maintaining our own positive self-identity, by associating negative traits with the groups of which we are not part, but this leads to prejudice and discrimination. So, for example, the child can equally say, "I'm strong because I'm not a girl and girls are weak" or "I'm good because I'm not on the *blue* team and the *blue* team is the worst."

Therefore, by social identity theory, we form *in-group* associations with people that we consider similar to us and view positively, and we form *out-group* associations with people that we consider different from us and view negatively. We will also act in ways that are consistent with the norms, expectations, and roles of the in-group, and different from those of the out-group.

It is important to stress that this is not a conscious choice, but an unconscious influence on our behaviour to maintain our own positive image of ourselves[9]. Nonetheless, this is a powerful drive on our behaviour, influencing how we think and act towards others.

The neuroscience of group behaviour

It is an uncomfortable fact, but it appears that our brain is automatically and unconsciously hard-wired for prejudice. This is in our biology. There is good reason for this when we look at evolution of our species. When living in family or tribal groups, with competition for resources, there is great survival value in having positive attitudes and motivations towards our own group to promote survival of our own kin[10].

Of course, our behaviour is not only determined by our unconscious, biological drives. To a certain extent, we also have choice and voluntary control over our behaviour, shaped by society and cultural expectations—our morality and conscience. With greater exposure to a variety of people, for example, by having friends with a range of ethnicities, we can choose or learn to act in non-prejudiced ways, overcoming the automatic, unconscious, biological processes[9].

So the way we act towards others is a balance between these two factors: the automatic and biological drives that still exist in our brain that lead us to discrimination between people we perceive as in-group versus out-group members; and our

conscious choices based on our learnt sense of morality and conscience.

To understand these biological influences on group behaviours and prejudice, we need to understand the neuroscience of empathy. Our ability to empathise with others, to understand their emotions and motivations, also involves unconscious processes of emotional contagion and conscious processes of cognitive empathy or perspective taking.

When we observe others' actions or emotions, the same neural states in their brain are automatically mirrored or emulated in our own brain, as a form of shared experience. This is known as emotional empathy or emotional contagion[11]. We come to understand others' intentions and goals through this neural emulation or mirroring process. Interestingly, these appear to be highly automatic processes in the brain that lead us to share some of the emotion that we observe in others. Our brains are wired so that we literally feel some of their joy and their pain, thought to be biological processes that help us to understand and empathise with the people around us.

Importantly, these neural mirroring processes in the brain are strongly influenced by the social relationships we have with others that we observe. Mirrored brain activity is much stronger when we are observing people whom we perceive as part of our own group or family or even race than for unfamiliar people. This also fits with well-known research on social bonding, known as the *chameleon effect* that shows that we tend to imitate people whom we like and we tend to like people who imitate us[12]. This form of emotional contagion, leading to shared experience, therefore also drives positive social relationships.

In the neuroscience lab, we usually examine these mirroring processes with MRI brain imaging. When we put people in the MRI scanner and show them pictures or video clips of others in distress or pain, depicting strong negative emotions, we see patterns of brain activity similar to what we would see if those people were actually experiencing the distress or pain themselves[13]. Importantly, although these neural empathy responses are much stronger when observing pain or distress in people with whom we share a close social relationship, these mirroring brain processes are not fixed but change with experience and learning. As we gain more experience with previously unfamiliar people, we start to show more automatic neural mirroring activity in the brain when observing those people's actions and emotions. In this way, developing positive social relationships with others also leads to stronger emotional contagion or sharing of underlying brain states.

As well as these unconscious and automatic processes for empathy that lead to shared brain states, we can also cognitively evaluate others' situations and consciously control our choices and actions to show empathy for others. This process, known as mentalising or perspective taking, involves consciously evaluating the situation from the other's perspective, based both on our past experiences of that situation and our understanding of the knowledge and beliefs of the other person[13]. This is a high-level cognitive-social process that underlies our sense of morality and conscience in our actions towards others.

Training programs that aim to increase empathy for others typically target this conscious cognitive process of perspective taking, as this is a skill that can be learnt. In these programs, students (children) are taught to consciously attend to and think about a situation from another person's perspective and to evaluate how that person must be feeling[14]. This allows the student to consciously consider the consequences of their own choices and actions in the other person, by evaluating the situation from that other person's perspective. In this way, students can learn to exert conscious control and choice over their behaviours and interactions with others that can override otherwise unconscious processes that may lead to negative behaviours and prejudice.

We therefore have a biological drive for closer association with people we consider part of our in-group than for others we consider out-group members, leading to in-group favouritism and out-group prejudice. This is reinforced by brain processes that lead us to feel closer emotional contagion, through automatic neural empathy processes, with those people with whom we share a positive social connection. Importantly, however, these automatic unconscious processes change with learning and experience with unfamiliar others. We can also learn and consciously use cognitive skills to evaluate the situation of others and exert conscious control over our actions towards them. In this way, our behaviour towards others is a combination of both our underlying automatic brain processes that lead to particular drives and our conscious evaluation and choices over our actions towards others.

Implications for classroom practice

As we can see, humans are very ready and biologically driven to make distinctions between people they perceive as part of their in-group and others as members of an out-group. Critically for teachers, such distinctions can begin to unconsciously drive positive feelings and behaviours towards those who are perceived as part of the in-group and negative ones towards

towards people who are not.

It is recommended that teachers actively manage interactions between students. Students should be allowed a level of agency in their own social interactions and how they organise themselves; however, teachers should ensure that all members of the class feel part of the in-group and that toxic out-group divisions do not develop in the classroom. Teachers should take precautions to avoid social separation, for example, by altering the student composition of the groups. This could involve changing the assigned seating each term or assigning students to different groups for each group task. Teachers should also avoid making explicit divisions that may compromise how students treat each other such as forming groups based on academic ability. However, there are no hard-and-fast rules. Ultimately, it is important to be aware of how groups form so we can make more informed choices based on context and prevent prejudice and negative behaviours and feelings towards others to develop.

Educators should be aware of both the conscious and unconscious factors that drive group behaviour. Explicit empathy programs tend to teach students to consider the perspective of the other person, for the student to consciously consider their own choices and behaviour and the consequences of their actions on the other person. These conscious choice behaviours can override the more unconscious biological drives that can lead to prejudice and negative behaviours towards others. However, educators can also address these unconscious drives by promoting a positive in-group culture within the classroom and preventing out-group divisions from developing. By this, the teacher is fostering social synchrony within the classroom.

Imagine this scenario: A class or group of students are working together on a problem or task. At the start of the task, the students may be somewhat isolated, but as they bring themselves and their thoughts to the goal, they start to experience a shared understanding of the goal of the group and their roles as members of the group. If the group is functioning well socially, the students may start to demonstrate a shared behavioural state, with similar body language, vocal tone and volume, start to mimic one another, and show shared emotional states. This behavioural or emotional contagion further strengthens group cohesiveness.

The teacher can play an important role in constructing the social interaction that leads the group towards their goal. The teacher draws the students' interest towards the task, directing questions and discussion to each member of the group, modelling a range of positive prosocial behaviours such as eye contact, rapport, shared interest in the learners and the topic, physical proximity or closeness, directing the students' attention toward the shared intent, and working cooperatively to complete the task.

Fostering a positive social culture within the classroom brings many benefits to learning. Learners report feeling safer working with people that they know and who they know understand them so it is important to encourage all students to interact with each other from the beginning of the term. Within these safe groups, learners are more likely to take academic risks, contribute ideas, and engage in discussions. Cooperation within small groups can also extend to broader cooperative group behaviour across the class. As students become more comfortable working in small groups, and as they innately take on the prosocial behaviours and attitudes of the teacher, students can start to expand this influence to broader groups.

Modelling prosocial behaviours and deliberately constructing social learning environments in this way motivates students to support one another to achieve a shared sense of understanding and experience. In turn, these positive social interactions further enhance group connectedness.

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