



# Cooperation & Altruism

The Science of Resilience

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## Definition

Cooperation and altruism are both, at their core, about helping others. Cooperation involves helping others in order to reach a shared goal and thus also benefit yourself. Altruism is commonly understood as helping others with no benefit, or at a cost, to yourself. While these two concepts involve differing intentions and situations, the shared aspects of helping others, positive emotions, and building relationships benefit the resilience process.

### Cooperation

Cooperation can quite simply and intuitively be defined as working together on a task to achieve a shared goal. One of the most well-developed theories on cooperation is Social Interdependence Theory (SIT). The theory was initially developed by Morton Deutsch and then built upon by David W. Johnson. The main tenant of SIT is that “social interdependence exists when the outcomes of individuals are affected by each other’s actions” (Johnson & Johnson, 2005). There are two basic continua in SIT, one describes the type of interdependence among the goals of the people involved and the other relates to the types of actions taken. Positive interdependence exists when the actions of individuals promote the achievement of joint goals, as is the case in cooperation. Conversely, negative interdependence exists when the actions of individuals obstruct the achievement of each other’s goals, as in competition. Johnson and Johnson (2005) claim that cooperation or competition can only exist as people take action to achieve a goal. According to Deutsch (2011), positive interdependence, and therefore cooperation, can result from multiple situations, such as: people liking one another; being rewarded in terms of their joint achievement; needing to share resources or overcome an obstacle together; holding common membership or identification with a group whose fate is important to them; being unable to achieve their goals unless they divide up the work; being influenced by personality and cultural orientation; being bound together because they are treated this way by a common enemy or an authority; etc. It is also important to note that positive and negative interdependence are dichotomous concepts used to illustrate the theory and that in practice, few situations are purely positive or negative and that most people have a mixture of goals (Deutsch, 2011). The second continuum refers to the types of actions taken by individuals: “effective”, which improves the person’s chances of obtaining a goal, and “bungling”, which decreases the person’s chances (Deutsch, 2011; Johnson & Johnson, 2005).

In SIT, there are three psychological processes that affect the interaction patterns among individuals. Substitutability refers to the degree to which actions of one person can substitute for the actions of another person. An effective action of a cooperator can substitute for one’s own actions in reaching a goal; but an ineffective, or bungling, action does not substitute for one’s own actions and instead, one will have to extend extra effort to make up for the ineffective actions of others (Deutsch, 2011). Substitutability is central to the functioning of all social institutions, the division of labour, and role specialization (Deutsch,

2011). Cathexis is the investment of psychological energy in objects outside of oneself, such as friends, family, and work; it can be positive or negative and is the basis of attitude formation. In cooperative situations, effective actions lead to positive cathexis. The cathexis attached to other people's actions tends to generalize to the person as a whole, which explains why people who cooperate to achieve a goal tend to regard each other positively. Finally, inducibility is the openness to being influenced and to influencing others; it is the willingness to be helpful to someone whose actions are helpful to you. In a cooperative situation, it provides the psychological basis for channeling individual efforts into a coordinated system of group action orientated towards a shared goal.

SIT is a comprehensive framework for how individuals may work together or against each other to achieve their goals and the processes that mediate and result from such actions. More concise definitions of cooperation have been formulated for use in resilience measures, such as Constantine et al.'s (1999) Healthy Kids Resilience Assessment, which defines cooperation as "flexibility in relationships and the ability to work effectively with others" (p. 13). Constantine et al. (1999) further combine cooperation with communication skills for a single resilience factor; they define communication skills as "the ability to effectively exchange information and ideas and express feelings and needs to others" (p. 13). Cooperation is also linked to communication in the Resilience Scale for Adults (RSA; Friborg et al., 2006) and in the Resilience Scale for Adolescents (READ; Hjemdal et al., 2006). Effective communication is a key feature of good cooperation (Deutsch, 2011). Also commonly tied to cooperation is trust (Cuzzolino, 2011; Johnson & Johnson, 2009). Cuzzolino (2011) suggests that cooperation is an outcome of trust. Thus, cooperation is comprised of many social competencies, such as good communication, and related to other prosocial behaviours, such as trust.

One of the most successful and widespread manifestation of cooperation theory in practice is cooperative learning. "Cooperative learning is the instructional use of small groups for students to work together, maximizing their own and each other's learning" (Johnson & Johnson, 2005, p. 327). The defining feature of cooperative learning is to involve students in working in small groups to help each other in the achievement of every learning objective such that students are responsible for their own learning and their group mates' learning equally (Gorucu, 2016). It places students at the centre of learning and engages them in the process (Gorucu, 2016). Cooperative learning can be broadly broken down into three types: informal cooperative learning, used for quick discussions that last from a few minutes to one class period; formal cooperative learning, used for assignments that last from one class period to several weeks; and cooperative base groups, which last for a semester or a year to provide students with support, help, encouragement, and assistance (Johnson & Johnson, 2005, 2009).

## Altruism

Altruism, as a behaviour, is defined as an action that is costly to the agent who performs it but benefits another party (Scheffczyk and Peacock, 2010). The term was introduced by

philosopher Auguste Comte, along with egoism, as two distinct motives within the individual. For Comte, altruism is social behaviour expressing unselfish desire to live for others. Batson (2014) defines altruism as “a motivational state with the goal of increasing another’s welfare” (p. 6). In this definition, a motivational state is a force in a person that is drawing him or her toward reaching a goal. To feel pleasure, increasing other people’s welfare has to be the person’s end goal, not an intermediate goal (Batson, 2014). An action is altruistic in the psychological sense if the goal of benefiting another party is enough to motivate a person, or with a self-directed goal, is enough to motivate a person. The action also needs to meet a person’s reasonable expectation of benefit and cost to perform the action (Scheffczyk and Peacock, 2010). However, Warneken and Tomasello (2009) argue that altruism is not a homogenous trait but consists of domains of activity such as helping others achieving their goal and sharing and informing others of things they need or want to know.

Research on the evolutionary basis of altruism adopts several perspectives including kin selection, reciprocal altruism, multilevel theory, and costly-signalling theory. Byrne (2008) found no differences between men and women in relation to self-reported altruism. However, men tend to focus more on altruism for the group (society) while women tend to focus more on helping individuals. Altruistic behaviours begin in infancy (Warneken & Tomasello, 2009). Warneken and Tomasello (2009) found that toddlers engage in helping behaviour, sharing their valuable goods (e.g. food) and helpfully informing and communicating with others. Reciprocity, social selectivity, norms, and culture then shape their altruistic tendencies (Warneken & Tomasello, 2009).

Altruism has always been a debate among evolutionary theorists. The idea that natural selection favours behaviour that benefit others that share our genes or closely related kin gives some explanation to altruism behaviour (McAndrew, 2002, p. 79). Kin altruism is induced by sense of attachment and empathy toward kin (Ashton, Paunonen, Helmes & Jackson, 1998). However, this explanation does not explain altruistic behaviour toward strangers.

Another form of altruism is reciprocal altruism; a cooperative behaviour between unrelated individuals that aims to benefit everyone involved (McAndrew, 2002). Reciprocal altruism is based on long-term cooperative interactions. The concept of reciprocal altruism is similar to the idea of inducibility in Social Interdependence Theory (SIT), defined as the willingness to be helpful to someone whose actions are helpful to you. Reciprocal altruism is not the same as cooperation, as it involves separate instances of helping rather than working towards a joint goal. However, reciprocal altruism can create interdependent and supportive communities, of which cooperation is a key factor.

Altruism toward a stranger requires more emotional stability. People who have more negative emotions and gets offended easily will be less inclined to initiate or reciprocate in altruistic behaviour (Ashton et al., 1998). Karsten (2015) linked reciprocity and expectation for future exchange as motivations for altruism and remittance among Peruvian migrants.

Another perspective regarding altruism is multilevel-selection theory, explained by Wilson (1997). Wilson (1997) distinguishes between competition within group and competition between individuals in different groups. A group dominated by altruists will have an advantage relative to the non-altruists' group. Therefore, the number of altruist groups will increase. Within groups, however, altruists will be eliminated first by the more selfish members and within-group competition appears more often than between-group competition (McAndrew, 2002).

Costly Signalling Theory explains large altruistic gifts to strangers. This theory explains that altruistic behaviours are purposely done to show dominance to other people and that the person doing the behaviour is a good ally. Furthermore, significant unselfish behaviour toward other people is an effective strategy for inducing reciprocal altruism (McAndrew, 2002).

Additionally, altruism is significantly related to empathy and spirituality. Empathy is defined as "a prosocial emotion that includes awareness of another's suffering and affective participation in the other's feelings" (Huber & MacDonald, 2012, p.209). Feelings of empathy correlate with altruistic behaviour, especially among kin (Ashton et al., 1998). Stimulating empathy induces people to be helpful and generous (Andreoni, Rao, & Trachtman, 2017). Krebs (1975) found that the perception of similarity triggers empathy and people who have strong empathic feelings toward another are more willing to help, even at their own expense. Huber and MacDonald (2012) found that altruism is significantly correlated with cognitive orientation toward spirituality ( $r=.30$ ,  $p<.001$ ), religiousness ( $r=.19$ ,  $p<.05$ ) and spiritual experience ( $r=.36$ ,  $p<.001$ ). The way people think about religious ideas, spiritual experience and less so religiousness is positively related to empathy and altruism, while existential wellbeing was negatively related to empathy. The relationship shows that the relation of spirituality with prosocial behaviour is not wholly positive (Hubart & MacDonald, 2012, p. 216).

## Relationship to Resilience

The benefits of cooperation have been studied in North America, Asia, Southeast Asia, the Middle East, Africa, Europe, and many other countries, and the findings have been essentially consistent (Johnson & Johnson, 2005). However, Johnson and Johnson (2005) do identify a lack of critical cross-cultural research that examines differences in cooperation between cultures and contexts. Similarly, while altruism has found to benefit personal and collective resilience following disasters in many different countries (Ai et al., 2013; Neal, Bell & Wilby, 2011), there may be important cultural differences. For example, Ai et al. (2013) found that, among disaster relief volunteers following hurricanes Katrina and Rita, altruistic behaviours built collective resilience among volunteers by helping them build deep connections with each other and giving them a sense of hope and optimism in facing the disaster. However, Tanyag (2018) found that post-disaster relief and reconstruction after the Haiyan typhoon relied on female altruism and women's unremunerated social labour. Women were the primary

caregivers in the family while working to earn some income and trying to rebuild their homes. Women and girls neglect their own needs and rights due to cultural expectations that legitimize self-sacrificing acts (Tanyag, 2018).

## Cooperation and Resilience

Cooperation has been included as a factor in multiple resilience scales. Constantine et al. (199) included “cooperation and communication skills” as an internal resilience asset in their Healthy Kids Resilience Assessment. Cooperation/ good communication skill and flexibility in social matters comprise the social competence subscale of the Resilience Scale for Adults (RSA; Friberg et al., 2066) and the Resilience Scale for Adolescents (READ; Hjemdal et al., 2006). Cooperation, within the Social Interdependence Theory (SIT), has been linked to a range of outcomes which can be categorised into three main groups: effort to achieve; positive interpersonal relationships; and psychological health (Johnson & Johnson, 2005).

The relationship between cooperation and effort to achieve relates to the well-supported finding that people working in groups tend to work harder and are more effective at achieving their goals than people working alone or in competition with others (Johnson & Johnson, 2005). There is evidence that cooperation, compared to competitive or individualistic efforts, results in a greater willingness to take on difficult tasks and persist, despite difficulties, in working toward goal accomplishment, as well as greater intrinsic motivation, higher expectations for success, higher incentive to achieve due to mutual benefit, higher epistemic curiosity and continued interest in learning, and a higher commitment to achieve (Johnson & Johnson, 2005). It has also been shown that cooperation promotes higher-level reasoning, critical thinking, metacognitive thought, and the transfer of group learning to individual attempts (Johnson & Johnson, 2005). These outcomes naturally lend themselves to academics, and indeed there is consistent evidence that cooperation correlates with academic achievement (Johnson & Johnson, 2005), but these outcomes also relate to better problem solving and coping skills. Nopembri et al. (2019) found that cooperative learning integrated into the PE and sports program improved elementary school-aged children’s stress coping skills and problem-solving skills. The 810 fourth through sixth-grade students Nopembri et al. (2019) included in their survey had experienced volcanic disaster and lived 5-15 km from the top of the Merapi volcano. The authors claim that cooperative-based activities and learning in the PE and sports program help the children in their sample develop the coping and problem-solving skills necessary to engage in processes of resilience while living in a disaster-prone area (Nopembri et al., 2019).

Cooperation, compared to competitive or individualistic experiences, promotes more positive relationships and social support (Johnson & Johnson, 2005). Much of the research on cooperation and interpersonal relationships has been done with cross-ethnic relationships or with handicapped and non-handicapped participants, showing that cooperative experiences can create positive relationships among diverse participants (Johnson & Johnson, 2005).

Furthermore, the research shows that relationships formed within cooperative groups can outlast the group situation (Johnson & Johnson, 2009). The research shows that cooperators give and receive social support from each other for tasks both related to group tasks and personal matters (Johnson & Johnson, 2005). The positive relationships and social support engendered by cooperative tasks are themselves a crucial resilience resource. Wolgast and Fischer (2017) found that teachers who cooperated in planning lessons experienced a higher level of colleague support and, in turn, demonstrated lower levels of perceived stress at school over a four-year period. The literature shows that teaching is well associated with high levels of stress and, in Germany where Wolgast and Fischer's (2017) study was conducted, cooperation among teachers is not built into the school system. However, their study shows that the social support generated by cooperative activities significantly helped them manage their work-related stress (Wolgast & Fischer, 2017). Thus, cooperation can build the necessary social resources for successful coping with stress and adversity.

The relationship between social interdependence and psychological health has been found in a range of different populations, including university students, older adults, suburban high school seniors, juvenile and adult prisoners, step-couples, and Olympic hockey players (Johnson & Johnson, 2005). Cooperative attitudes are highly correlated with many indexes of psychological health, such as: emotional maturity; well-adjusted social competencies; basic trust and optimism about other people; ego strength; self-confidence; independence; and autonomy (Johnson & Johnson, 2005). Importantly, cooperative experiences have been found to promote higher self-esteem than competitive or individualistic experiences, specifically, researchers find that cooperative experiences relate to people's belief that they are intrinsically worthwhile (Johnson & Johnson, 2005). "In cooperative efforts, participants tend to (a) realize that they are accurately known, accepted, and liked by their peers, (b) know that they have contributed to their own, others', and group success, and (c) perceive themselves and others in a differentiated and realistic way that allows for multidimensional comparisons developed from complementarity of their own and others' abilities" (Johnson & Johnson, 2005, p. 312). To further support the relationship between cooperation and psychological health, the literature also shows a negative relationship between cooperation and depression. The literature mainly focuses on deficits in cooperative behaviour in individuals with major depressive disorder; it is likely that deficits in cooperative behaviour are both a cause and consequence of depression (Clark et al., 2013).

Within Social Interdependence Theory (SIT) five mediating variables have been identified between cooperation and positive outcomes; they are: positive interdependence; individual accountability; promotive interaction; social skills; and group processing (Johnson & Johnson, 2009). As mentioned previously, positive interdependence is a keystone of SIT and exists when individuals' goals are linked in some way; the knowledge that one's performance affects the success of one's group mates creates a shared responsibility and can increase one's effort to achieve. Johnson and Johnson (2009) find from their literature review that, in addition to the group accountability created by positive interdependence, individual accountability is



equally important for high achievement. Individual accountability can be induced when each person's performance is assessed, and the results are given back to the individual and the group. Thirdly, there is promotive interaction, which occurs when individuals encourage and facilitate each other's efforts. Fourthly, the appropriate use of social skills has been identified as a key factor for successful cooperation. Specifically, interpersonal and small group skills, including getting to know and trust each other; communicating accurately and unambiguously; accepting and supporting each other; and resolving conflicts constructively. Finally, group processing, when group members reflect on which actions were helpful and which were not, and make decisions about which actions to change, has been shown to improve cooperation, increase members' efforts to achieve goals, members' sense that they are valued, and group identification (Deutsch, 2011; Johnson & Johnson, 2009). A necessary element of group processing is expressing respect for each other's contributions to the group effort and for each other as persons.

Another key benefit of cooperation identified by Social Interdependence Theory (SIT) is positive conflict resolution. Cooperative processes lead to more constructive processes of conflict resolution, which results in mutual benefits and satisfaction, strengthening relationships, and positive psychological effects (Deutsch, 2011). Deutsch (2011) claims that having a cooperative orientation can help reframe conflict as a mutual problem to be resolved through joint cooperative efforts, even if the goals of the conflicting parties appear to be negatively interdependent or opposed. Thus, Deutsch (2011) suggests that even in situations of appearing conflict, cooperation can occur. A cooperative orientation is a resilience resource that can help people respond constructively to conflict.

Pines et al. (2014) explored the ways in which a cooperative conflict resolution style could contribute to nurses' resilience in the workplace. Healthcare professions require collaboration and yet, according to Pines et al. (2014), interpersonal conflict is inevitable and may result in burnout, absenteeism, turnover, and distress. The literature suggests that positive professional relationships and networks can increase nurses' resilience; cooperation and constructive conflict resolution can result in such positive relationships and social support. In Jackson et al.'s (2011) study of undergraduate nursing students from a large Australian university who had just finished their clinical placement, the students supported each other through joint advocacy to combat the hostility they faced in their placements. When facing discrimination from senior staff members at the clinic, the nursing students cooperated to go to their superiors and advocate for themselves; in this case study, the students' cooperation offered support to resist oppression and built their resilience (Jackson et al., 2011).

### *Cooperative Learning*

As mentioned in the previous section, cooperative learning is one of the most validated implementations of cooperation and Social Interdependence Theory (SIT). "Cooperative learning has been used by so many different teachers, in so many different subject areas and

settings, in preschool through adult education, with so many varied tasks and students, and in so many different countries and cultures that its effectiveness is almost taken for granted” (Johnson & Johnson, 2009, p. 374). Cooperative learning has shown success with both students and teachers, leading to better learning outcomes, social support, and prosocial behaviours.

Cooperative learning is indebted to Lev Vygotsky’s zone of proximal development theory. Vygotsky (1978) posited that children make the most gains in learning when they participate in activities slightly beyond their ability with the cooperation of knowledgeable adults or more competent peers (White, 2011). The zone of proximal development (ZPD) refers to the difference between a child’s competency, or what they can accomplish alone, and what they can accomplish with the help of others. White (2011) suggests that cooperative learning can utilize a child’s ZPD to introduce new forms of prosocial cooperative thinking, feeling, and action. Constructive conflict resolution is just one example of the prosocial behaviour that can result from cooperative experiences. Cooperative activities have often been utilized in school curriculum to promote prosocial behaviour in children. Cooperative activities are easily incorporated into physical education (PE) classes. Cooperation-based activity interventions have been implemented in PE classes in Indonesia (Nopembri et al., 2019), Turkey (Gorucu, 2016), and Greece (Goudas & Mgotsiou, 2009). In a sample of 810 fourth through sixth-grade students (440 girls and 370 boys; aged 7-15, mean age = 10.3, SD = 1.09; intervention group n=266, first control group n=214, second control group n=330), Nopembri et al. (2019) found that a unique PE and sports program with cooperative games significantly increased students’ problem-solving and stress coping skills. In a sample of 48 high school seniors (intervention group n=24; control group n=24), Gorucu (2016) found that PE classes that incorporated cooperative learning improved students’ problem-solving skills and self-control. Gorucu (2016) posits that cooperative groups teach students to use their communicative skills effectively, share knowledge, and be more tolerant to others, as a result of which, they develop problem-solving skills. In a sample of 114 students (intervention group n=57, 29 boys and 28 girls; control group n=57, 30 boys and 27 girls), Goudas and Magotsiou (2009) found that cooperative PE lessons significantly improved students’ cooperation skills, empathy, quick-temperedness, and disruptiveness on both self- and peer-report measures, as well as improving their self-disclosed preference for group learning and discomfort with group work. Gorucu (2016) claims that, “if cooperative groups can function effectively, students can learn to learn from each other, exist together, respect each other, and listen to each other” (p. 999); thus, cooperative activities can improve individuals’ prosocial tendencies. Prosocial behaviour can generate more social resilience resources. That cooperative activities can ultimately lead to processes of resilience can be found in Hjemdal et al.’s (2006) validation of the Resilience Scale for Adolescents (READ), where youth who participated in cooperation-based hobbies had higher resilience scores.

Just as cooperative learning can promote social skills, it can also facilitate the learning of tasks certain individuals might struggle with alone. For example, shared reading activities can improve the reading comprehension and engagement of children with Autism Spectrum

Disorder (ASD). Shared reading is a broad term that usually involves an adult reading with a child, incorporating interaction through questioning and discussion; as in Vygotsky's zone of proximal development, shared reading provides scaffolding for language and literacy development. When reading, children with ASD may require more guidance to understand characters' feelings and the narrative storyline within a text (Kim et al., 2018). Furthermore, many children with ASD struggle with language and communication (Mucchetti, 2013). Shared reading has been shown to help children with mild to severe ASD. In a sample of four minimally verbal children with ASD (three boys and 1 girl; aged 6 to 8 years old), Mucchetti (2013) found that shared reading with a teacher improved story comprehension and activity engagement. The teachers in this study reported that the shared reading activities were meaningful for their students and would be easy to implement in the future (Mucchetti, 2013). In their study with three male preschool children with ASD, Fleury et al. (2014) found that dialogic reading – asking questions to encourage children to actively participate in reading – increased the on-task behaviour, verbal participation, and overall participation. Kim et al. (2018) found that a shared reading intervention, where the adult reading-partner involved the child in the process of reading by directing their attention to the text, explaining the meaning of target vocabulary, and asking comprehension questions, significantly and drastically improved the reading comprehension and engagement of three male children, aged 6, 7, and 8 years old, with ASD. Furthermore, these improvements were maintained three weeks after the intervention (Kim et al., 2018). The children reported enjoying the reading sessions and that they helped them understand the story better, improve their reading skills, and made them want to read more storybooks; their behaviour therapists indicated that the shared reading intervention was appropriate, effective, and easy to generalize across different settings and subjects (Kim et al., 2018). Children with ASD may struggle in school due to difficulties with reading comprehension and staying engaged in learning activities, simply sharing the task with an engaged adult may improve their abilities, give them the opportunity to access age-appropriate literature, and strengthen their overall resilience in the school context.

### *Cooperation among Teachers*

Cooperation among teachers has been shown to improve teacher resilience and efficacy (Collie et al., 2012; Wolgast & Fischer, 2017). As previously mentioned, Wolgast and Fischer (2017) found that cooperation among teachers increased the social support they experienced and subsequently protected them against perceived work-related stress. Collie et al. (2012) found that a school climate that emphasized relationships and cooperation, where teachers felt there was high levels of collaboration among colleagues for teaching and planning, was positively associated with teaching efficacy. Self efficacy is a crucial resilience resource; feeling a sense of efficacy with regard to their teaching can empower teachers and benefit their students. Collie et al.'s (2012) study was conducted with 664 teachers (80% women) from 17 different school districts in B.C. and Ontario. Contrary to Wolgast and Fischer's (2017) findings with 2648 teachers from Germany, Collie et al. (2012) found that a cooperative school climate

resulted in greater perceived stress regarding student behaviour and workload. The authors acknowledge that their finding is contrary to previous research and they suggest a possible explanation is that they did not measure teachers' perception towards collaboration (Collie et al., 2012). The literature differentiates between collaborative cultures, where collaboration occurs naturally and is positive for teachers involved, and contrived collegiality, where collaboration is required and enforced by administrators and may be viewed negatively by teachers (Collie et al., 2012). Another perspective in the literature suggests that there are costs as well as benefits to cooperation, and one such cost is work intensification, which may result in greater work-related stress (Collie et al., 2012).

### *Community Cooperation*

Cooperation can benefit entire communities as well as individuals. Cozzolino (2011) suggests that cooperation is an outcome of trust and that high levels of trust and cooperation make up social capital. An early theorist of cooperation, Solomon Asch, claimed that individuals need to work with others, to count on others' lives, to be an object of significance for others, and that "subordinating one's own interests to those of the community seems to be as intrinsic and powerful a motive as acting on self-interest" (Johnson & Johnson, 2005, p. 295). Thus, cooperation is essential for community and for society, and it is a fundamental aspect of social capital. Social capital is a critical component of community resilience following a disaster (Aldrich & Meyer, 2015). Disaster research recognizes that in order to survive and recover from disasters, communities must work together (Aldrich & Meyer, 2015). Cooperation among groups is the source of social capital which facilitates processes of resilience during times of stress and adversity by making resources embedded in one's social networks available.

### **Altruism and Resilience**

Like cooperation, altruism has been linked to stronger social relationships and support (Staub & Vollhardt, 2008) and positive psychological outcomes, such as self-esteem (Eisenber, 1992) as potential pathways by which altruism contributes to resilience. Altruism may be especially relevant for individuals recovering from trauma. It has been posited that suffering, trauma, and stress can lead people from a vulnerable state into perceiving other human beings in a more positive and caring way. This helps them not only to survive the suffering and find meaning or purpose to their struggles (Lietz, 2011) but also to shift their focus to other human beings and become more helpful and caring (Staub & Vollhardt, 2008). Kindness and caring for others are a potential source for personal resilience (Ai et al., 2013, Isaac et al., 2017). For example, veterans who volunteer their time on weekly basis have better well-being and more social support (Isaac et al., 2017). For victims of human-caused trauma (e.g. victims of violence), helping other people helps them maintain their identity, shift their focus from themselves, engender a sense of self-efficacy, and build a group affiliation with other people (Staub & Vollhardt 2008). Helping other people also increases the chance for reciprocity in the future and provides them with more social support (Staub & Vollhardt, 2008). However, Lopez-

Fuentes and Calvete (2015) found that altruism is more prominent in women who have recovered from intimate partner violence than in women who are not recovered. This suggests that, to mobilize altruism as a factor in building resilience, a person has to reach a certain point in the recovery process (Lopez-Fuentes & Calvete, 2015).

### *Altruism in Children*

More altruistic children tend to be happier, better able to express their emotions freely, more sociable, better adjusted to their environment and to have a higher self-esteem (Eisenber, 1992). Altruistic behaviour is seen in toddlers by their way of exhibiting sharing and caring behaviour (Warneken & Tomasello, 2009). Culture and caregiver's socialization practices develop toddlers' prosocial behaviour (Giner Torrés, & Kartner, 2017), interpersonal responsibility and personal choice (Köster et al., 2016). Role playing and provision of different perspectives lead to cognitive development of altruistic behaviour. Barragan and Dweck (2014) found that reciprocal activity triggered altruistic behaviour and expectation of it in small children whereas non-reciprocal activities elicited less altruism. Young children can draw broad inferences about the benevolent norm of a situation from reciprocal patterns of behaviour (Barragan & Dweck, 2014; p. 17073).

In children, resilience can be seen in their altruistic caretaking behaviour characterized by the desire to care for younger kids and reach out to other children that appear to be left out (Lietz, 2011). Altruism in children is predicted by their gender (girls are more altruistic than boys), nationality, academic performance, and empathy (Leontopoulou, 2010). Altruism is directly correlated with empathy and resilience, and inversely correlated with competitiveness in the classroom. Feelings of sympathy and compassion toward others in early adulthood is positively related to maternal warmth and support during adolescence and negatively related to the mother's negative affect during childhood and adolescent (Eisenberg, VanSchyndel, & Hofer, 2015).

## Improving

According to Deutsch (2011), in order to sustain a cooperative orientation in a hostile environment, it is useful to have a support system of individuals with similar orientations or to have support from a manager in the system (e.g., the principal of a school, CEO in a company, or parent in a family). A manager who wants to support cooperation must recognize that the basic system must be change, beyond educating students, employees, or children to have a cooperative orientation. Other key people in the system, such as supervisors, staff, teachers, and parents, should also be educated so that their actions can reflect and support a cooperative orientation. Furthermore, it often requires fundamental change to the incentive structures so that rewards, salaries, grades, etc. do not foster a competitive relationship among people (Deutsch, 2011). Thus, beyond individual efforts and activities to improve a cooperative

orientation, it is also useful to look at whether the environment supports a cooperative orientation.

It is acknowledged in the literature that cooperative learning and other forms of teamwork are not always received positively. León-del-Barco et al. (2018) notes that it is not enough to assign a task to a group of students and tell them to work together. As seen in Collie et al.'s (2012) study, when cooperation is required and enforced by administrators, teachers may respond negatively and experienced greater workload and job-related stress. However, the literature is also full of suggestions for inducing willing cooperation. León-del-Barco et al. (2018) suggests the following aspects for classroom cooperation: the teacher's use of methodologies favouring peer cooperation; students' training in teamwork; the team's social skills' task design; and the team's beliefs about its efficacy and performance' interdependence; and the absence of conflicts. Cozzolino (2011) finds that cooperation is an outcome of trust, thus it is important for group members to trust each other – many of the cooperation-improving activities are some form of trust game. Cozzolino (2011) also found that participants were more likely to trust and cooperate with each other when there was an equal distribution of resource; if participants perceived they received less resources or more than others in their group, they reported less desire to engage in cooperative tasks. According to Johnson and Johnson (2005; 2009) positive interdependence and reward interdependence; individual accountability, in addition to group accountability; promotive interaction; and social skills all affect cooperation. They identify the social skills necessary for high quality cooperation as: trust; effective communication; acceptance and support of group members; and constructive conflict resolution. Group processing – where group members reflect on which member actions were helpful and unhelpful and make decisions about what actions to continue or change – has been shown to improve cooperation (Deutsch, 2011; Johnson & Johnson, 2005; 2009).

The Cooperative Learning Centre at the University of Minnesota has been conducting research on and promoting cooperative learning for decades. Their website may be a useful resource: <http://www.co-operation.org/>

## Interventions

Various interventions have been designed to promote cooperation and altruistic behaviour in children and adults. Enhancing compassion toward the self and others, empathic traits, and mindfulness can increase people's altruistic behaviour (Hafenbrack, Cameron, Spreitzer, Zhang, Noval & Shaffakat, 2020). Interventions that foster opportunity for helping and bolstering volunteerism, e.g. families mentoring other families (Lietz, 2011) and the American Vet to Vet program (Isaacs et al., 2017), can help people find meaning through prosocial behaviour. Therefore, social service organisations may also consider creating interventions that foster opportunities for helping and do a strength-based assessment for people to help them positively appraise their situation (Lietz, 2011).

## Musical Intervention to Increase Cooperation in Kindergarten-age Children

There is evidence in the literature that joint singing can improve cooperation; based on this idea, Kirschner and Tomasello (2010) tested a joint singing, dancing, and music making intervention with a sample of 96 four-year-olds (48 boys and 48 girls, mean age = 4 years and 6 months, range = 4-5). The children were recruited from 16 German urban day-care centres. Children were paired with another child from the same kindergarten group so that it could be assumed that they had some familiarity with each other; children of the same gender were paired so that gender could be examined as an independent variable. There were 48 children in the experimental condition and 48 in the control condition. The experimental group engaged in a 3-minute episode of interactive play with their pair and an adult; they danced, sung, and played percussion instruments to a novel, but easy-to-learn children's song. The control condition interacted with one another and an adult during the same 3-minute interactive play activity but without singing, dancing, or playing instruments. Immediately after the manipulation phase, each pair participated in two social interactions designed to test their willingness to help their partner and cooperate on a problem-solving task.

The interactive play episode consisted of a "garden pond" (an oval blanket) with nine coloured frogs sitting in trios on three lily pads at the pond's edge. Each frog could be used as either a normal toy by hopping it up and down on the floor, or as a musical instrument by scraping its back with a stick, depending on the condition. At the beginning of the activity, the experimenter introduced one extra frog to the children and — as a warm-up task—asked each child to hold the frog by themselves and copy the experimenter's action according to condition (hopping it up and down or using it as an instrument). In order to pass the warm-up task, each child had to voluntarily pick up the frog at least once and imitate the experimenter's action. After the warm-up, the experimenter pretended that the nine frogs in the pond were still asleep and needed to be woken up either by a "morning song" (experimental condition) or by some "morning exercise" (control condition). After one round of demonstration, where the children only had to watch the experimenter, he invited the children to pick up a frog by themselves in order to help. During the next 3 minutes of semi-guided play, the children in the experimental condition imitated the experimenter in walking around the pond in time to the music, singing the song, and using the frogs as instruments in synchrony with the song's lyrics. In the control condition, everybody walked and crawled around the pond while letting the frogs jump in non-synchronized intervals. The only differences between the conditions were the distinct features of music:

- Periodic pulse underlying the children's song acted as a shared reference for the children to synchronize their body movements – scraping the frogs with sticks and their footsteps while "dancing" around the pond.
- Discrete pitches and a highly repetitive melodic structure allowed the children to easily reproduce the song and sing along with the experimenter

- A joint performative context was created by the fact that the discretization of time and pitch in music made the children's actions and utterances predictable and ritualized
- An expressive mode beyond the referential and propositional use of words in language through music, which has been shown to communicate mood, affect, and distinct emotions between performer and listener

Following the joint music-making activity, children were more likely to choose the cooperative solution to an activity than children in the control condition. There was an effect of gender, such that girls cooperated more than boys. The authors conclude that joint music-making can enhance prosocial behaviour and cooperation in 4-year-olds. They suggest that music making is effective at mobilizing joint intentionality, so that people feel like part of a "we" unit and experience each other as co-active, similar, and cooperative members of a group.

### Mediated Activity-based Cooperative Learning (MACL) Experiences Intervention

Mediated Activity-based Cooperative Learning (MACL) experiences are grounded in Vygotsky's theory of learning as a shared-joint process in a responsive social context. White (2011) developed this intervention with the consideration that schools are the primary environment for facilitating cooperative pro-social development, as schools are social spaces wherein learning occurs in cooperation with teachers, classmates, and other school personnel. Mediated learning experiences result when a child and educator work together to build bridges from children's present understanding and skills to reach new understanding and skills, similar to Vygotsky's Zone of Proximal Development (ZPD) which theorizes that children make the most gains in learning and developing when they participate in activities slightly beyond their ability with the aid of knowledgeable adults or more competent peers.

This intervention delivered MACL experiences designed to enhance cooperative communication to a sample 44 eight-grade students (mean age = 13, SD = 5 months) from a multicultural suburban secondary school in East Anglia, England (White, 2011). The control group consisted of 22 students (11 boys and 11 girls) and the experimental group consisted of 22 students (11 boys and 11 girls). The intervention consisted of three one-hour MACL sessions over three consecutive days involving trust-building activities, effective communication, and group-cohesion exercises.

- On the first day, a scaffolded step-by-step approach was used to enhance first one-to-one trust and then whole-group trust. This session included the activities: 'running free', 'willow in the wind', 'trust lean' and 'blind crossing'.
- The second day focused on developing effective communication using activities such as "hula-hoop pass", 'elephants', 'cows and giraffes', 'speed pass' and 'human knot'. During the activities, the facilitator engaged in guided discussions to resolve any conflict when communication broke down or obstacles to task progress were experienced, so as to promote effective cooperation even in the face of adversity. At the end of each activity, the students were guided through a dialogue session to debrief them on the



cooperative process and develop understanding and avenues for the transference of knowledge from one experience to the next.

- For a full description of the trust and communication activities, the article directs readers to “[www.wilderdom.com/games](http://www.wilderdom.com/games)”, however, the site seems to be down. See the Activities section for some of the activities used.
- On the third day, the experimental group participated in the ‘mine field’ and ‘all aboard’ activities, novel activity-based problem-solving tasks that focused on trust and effective communication. After the participants were guided through these activities and provided guidance when difficulties in trust or communication arose, they were debriefed using a dialogical approach.

The intervention was evaluated when both control and experimental groups participated in a non-mediated peer-cooperative problem-solving task (White, 2011). Participants were provided with a briefing of the task but no further assistance or directions during the activities. “The aim of the ‘toxic waste’ task, the first activity, was for the participants to use the props provided to transport a bucket of water from one end of the gymnasium to the other. Upon completion of this task, the students participated in the ‘nitro crossing’ activity, which required them to transport the bucket of water from one side of a ‘gorge’ to the other side using a swing rope without spilling a drop of ‘nitro’” (White, 2011, p. 26).

Two researchers independently coded the participants’ interactions during the tasks as either on-task communication or off-task communication (White, 2011). The experimental group engaged in more positive on-task and cooperative interactions than the control group, which allowed for sustained and effective cooperative communication. The experimental group improved on cooperative skills, peer cooperation, and task performance on a cooperative problem-solving activity.

### Positive Peer Reporting (PPR) Intervention to Improve Cooperation

Positive Peer Reporting (PPR) is a procedure developed by Ervin et al. (1996) to improve the prosocial behaviour of rejected adolescents in residential care, although it has been used to equal effect in regular classrooms (c.f. Ervin et al., 1998). PPR is a daily, structured interaction wherein students are rewarded for praising the behaviour of the target student, usually an individual who is fairly antisocial. Jones et al. (2000) evaluated the ability of PPR to improve the cooperative behaviour of antisocial students in a residential program for delinquent and predelinquent adolescents in the American Midwest, specifically an eight-grade math class consisting of nine students and one teacher. Three students were recommended by the teacher due to their disruptive behaviour during cooperative learning activities.

The residential program awarded points for appropriate social and academic skills that could be exchanged for a range of privileges at home and school; thus, the PPR intervention awarded points when students praised the behaviour of the target student. The classroom teacher provided a rationale for PPR and taught the appropriate steps in providing compliments

during a 20-minute training session. Specifically, the teacher instructed the class that. “From now on, during group work, we will be focusing on peer relations. I will select a “star” at the beginning of the week. At the end of class, everyone will be given a chance to give a positive compliment to the star. Your compliment should describe something the student said or did any time during that day” (Jones et al., 2000, p. 34). The teacher also described the steps in providing positive compliments and posted them on a bulletin board:

1. Look at the person
2. Smile
3. Report something positive the person did or said during the day
4. Say something like “good job” or “way to go”

Examples of good compliments were given and included: “Mary raised her hand before speaking” and “Kevin gave me a pencil to borrow”. The students who provided appropriate positive compliments were immediately awarded points towards their privileges. Before the study, all students were the star for 1 week.

Following the PPR intervention, the three target students significantly improved in the amount of cooperative statements issued towards their peers. Following the increase in cooperative statements, the quality of social relationships and students’ social standing also improved.

## Compassion Training

Altruism is linked to people’s motives, emotions, and competencies to be supportive, understanding, kind and helpful. Compassion is rooted in caring for others, compassion from other people and self-compassion (Gilbert, 2014). Compassion training is done by demonstrating the skills and attributes of compassion, such as care for wellbeing, sensitivity, sympathy, distress tolerance, empathy, and non-judgement (Gilbert, 2009). Compassion training increased self-reported positive mood, life satisfaction, prosocial behaviour, and affiliation (Leiberg, Klimecki & Singer, 2011; Klimecki et al., 2013). Compassion training programs foster benevolent and friendly attitudes toward other people and oneself (Leiberg, Klimecki & Singer, 2011). The goal of the training is to develop prosocial feelings and motivation.

Weng et al., (2013) examined a two-week program of 30-minute instruction and training sessions. Participants practiced between sessions. Each session consisted of the following.

- Practicing compassion for a loved one (e.g. a friend or family member) by imagining a time when their loved one had suffered.
- Practicing this procedure for themselves, a stranger (i.e. someone they encountered in daily life but not well known) and a difficult person (i.e. someone with whom there was conflict). Hypothetical situations of suffering can be envisioned if needed (for stranger and difficult person).

- In each target, the participants were asked to pay attention to emotions and sensations evoked when thinking about the target.
- The participants then practiced wishing the target's suffering were relieved and repeated the phrases, "May you be free from this suffering. May you have joy and happiness."
- The participants then were asked to envision a golden light that extended from their heart to target, which helped to ease his/her suffering.
- The participants had to pay attention to bodily sensations, particularly around the heart.
- At the end of each session, compassion was extended to all beings.
- For each new session, participants could choose either the same or different people for each target category.

Leiberg et al. (2011) found a significant change in positive mood and helping behaviour toward strangers after compassion training. Weng et al., (2013) found that (a) compassion therapy activated brain regions implicated in social cognition and emotion regulation and (b) altruistic behaviour can be enhanced by executive and emotional control, reward processing and better understanding of another person's suffering. Compassion-based training serves as a beneficial way of coping and managing stress for adolescents. Adolescents who used compassion-based techniques such as compassion meditation and perspective taking reported a decrease in general anxiety (Reddy, Negi & Dodson-Lavelle, 2013).

## Meditation Intervention

Activities that facilitate the experience of self-nurture and spirituality, such as meditation, can serve as a potential vehicle for developing empathy and altruism (Huber & MacDonald, 2012; Wallmark et al., 2013). Similarly, mindfulness is directly correlated with day-level helping (Hafenbrack et al., 2020). Focused breathing therapy and loving and kindness meditation are shown to increase empathy and perspective-taking factors that are related to prosocial behaviour (Hafenbrack et al., 2020). Short training, even for 8 minutes per day increases empathy and prosocial behaviour (Hafenbrack et al., 2020). Wallmark et al., (2013) created 8-week training sessions, which included:

- 30 minutes of lectures on different topics.
- 10 minutes of mindful movements.
- 20 minutes of meditation.
- 15 minutes of question and answer.

The sessions covered topics such as mindfulness, receiving loving-kindness, giving loving-kindness to themselves and others, compassion for self and others, empathetic joy with others and self, equanimity, transforming self-shame and guilt into forgiveness, and promoting altruism to others. The participants also received a handout, meditation instructions and guide to practice. The results were measured using the Interpersonal Reactivity Index to measure empathy, the Perceived Stress Scale, the Self-compassion Scale, and the Five-facet of

Mindfulness Questionnaire. The intervention was found to increase perspective taking, self-compassion, and mindfulness, while decreasing perceived stress. The training facilitated the tendency for adopting the loving and kindness perspective toward others (Wallmark et al., 2013).

### Program to Promote Altruistic Behaviour in Children

Altruistic behaviours are related to empathy and to perspective taking, which is the capacity to put oneself in the place of another (Hafenbrack et al., 2020). Altruistic behaviours foster cooperation, acceptance, participation, and sharing to reach a common goal (Etxebarria & Apodaka, 1994; Wallmark et al., 2013).

Etxebarria and Apodaka (1994) built an educational intervention program to promote altruistic behaviour at school for children between 9-12 years old. The program involved the help and participation of parents, students, the school principal, teachers, and staff. The program was based on four learnable factors of prosocial altruistic behaviour: perspective taking, empathy, positive-person concepts (thinking positively that other people are capable of doing unselfish behaviours), and cooperation. The educational program consisted of four teaching units: keeping in mind other people's point of view, empathy, cooperation, and positive concept of people. Each teaching units consisted of:

- Theoretical preparation for the teacher in which basic concepts of the topic in questions are explained.
- The general and specific aims of the unit.
- Introductory and motivational activities: the teacher explained the concept and situations where this type of behaviour is present.
- Role-playing diverse examples and counterexamples that were video-taped. After watching the video, students were asked to suggest ways to improve. The examples were then re-played with the improvements.
- Each teaching unit is completed with a series of games for developing cooperation, non-verbal communication, and role-taking.

They measured these variables using:

- A sociogram, with which students describe how helpful, consoling and defending their classmates are.
- A questionnaire on prosocial behaviour.
- The perspective-taking game to help children reflects on their capacity for perspective taking.
- A class climate questionnaire.

The total duration of the program was 1 hour per week for 15 weeks, with initial and final evaluations on the first and last day. The program was effective for increasing students'

altruistic behaviour, improving the classroom climate, and students' capacity for perspective-taking (Etxebarria & Apodaka, 1994).

Lozada, D'Adamo and Carro (2014) created a short intervention for promoting altruistic behaviour for children aged 6 to 7. The intervention consisted of 10 weekly sessions of 50 minutes: 30 minutes of performing the program and 20 minutes of art activities. In each session, the children engaged in:

- Initial relaxation and mind-body integration practices (5 minutes).
- Activities related to attachment security priming using different stories, movies and pictures illustrating empathy, caring and altruism (5-10 minutes).
- Cooperative games where children were required to collaborate to achieve a common goal (15-20 minutes).

The intervention led to a significant increase in altruistic behaviour. It appeared to foster emotional security, self-awareness and perspective taking in children and resulted in increased awareness and positive behavioural changes (Lozada, D'Adamo & Carro, 2014).

## Activities

### **Cooperation-building Activities used in White (2011), from Village Volunteers/Wilderdom.com/games**

#### ***Trust Walk***

- Any number of people
- You will need blindfolds for half of the participants

Directions:

1. Choose a starting line and finish line. It is more interesting and challenging if the course is not in a straight line, but make sure there are no dangerous obstacles for the blindfolded team member. This game can operate as a race if desired, but the most important goal of the exercise is to develop trust between the participants.
2. Divide group into pairs.
3. Asks pairs to decide amongst themselves which one will be blindfolded. Blindfold them.
4. From the starting point, the seeing team member must guide the blindfolded team member to the finish line *using words only*. They are not allowed to touch the blindfolded team member but may use their voice for their partner to follow and to give directions.
5. Racing can be dangerous because of the attempts for speed, so rather than making it a competition it may be best to stagger out the start time of the teams to reduce crashing and competition.
6. Variations can include scattering obstacles in the path of the blindfolded team member that the speaker must guide them around, or the blindfolded member must find certain objects around the area.

7. At the end, have participants switch roles.

### **Human Knot**

- Any number can participate

Directions:

1. Have everyone stand in a circle
2. Have everyone put their hands out in the middle and take hold someone else's hands (making sure each hand is holding a different person!)
3. Instruct the group to untangle themselves without letting go of hands.
4. This exercise requires communication and collaboration. It helps groups learn to give directions and follow directions from each other on an equal footing.
5. When the group has untangled itself, it will be standing in a circle with hands held.

### **Willow in the Wind**

<http://www.wilderdom.com/games/descriptions/WillowInTheWind.html>

- For groups of about eight or groups that can be divided into groups this size
- For more mature groups who are capable of being calm and supportive
- For building trust in groups where people already know names
  - Perhaps more of a "Builder" activity

Directions:

1. The group stands in a circle with one person in the middle. Group members in the circle should take a stable "spotting" stance of one foot in front of the other, hands outstretched with elbows locked to the person in the middle, while being alert.
2. The person in the middle stands with their feet together and arms across their chest with their eyes closed.
3. To establish a contract with the members of the circle, the person in the middle says, "I am ready to fall. Are you ready to catch me?" The group responds, "We are ready to catch you." The center participant says, "Falling," and the group says "Okay."
4. It is important that the circle is tightly knit, shoulder to shoulder. Hands should be touching the person in the middle. The person in the middle, once the group gives the okay that lets them know they are ready, then leans into the circle's hands and lets themselves be passed around.
5. If safe, the group can eventually back up a little to allow the person in the middle to fall more freely. When the person in the middle has had enough, usually a two or three minutes, they simply stand up, open their eyes, and thank the group for supporting them.

## Assessment

### Cooperation Measures

#### ***The Resilience Scale for Adults (RSA) Social Competence Subscale (Friborg et al., 2006)***

- This subscale includes the component of good communication skills and flexibility in social matters, often interpreted as cooperation.
- The item-total correlations for this subscale ranged from 0.48 to 0.74
- Cronbach's alpha is 0.83 and the test-retest reliability over four months is 0.84.
- Items:
  - I am good at getting in touch with new people
  - I easily establish new friendships
  - It is easy for me to think of good conversational topics
  - It is easy for me to make other people laugh
  - I enjoy being with other people
  - I easily laugh
  - It is important for me to be flexible in social circumstances

### ***Laboratory Games Commonly Used to Measure Cooperation***

#### **Prisoner's dilemma (reciprocity)**

- A 2-person game
- For each round, the players can choose to either cooperate or defect.
- In Clark et al. (2013), mutual cooperation yields 3 points each and mutual defection yields 1 point each. If one player chooses to cooperate and the other chooses to defect, the cooperator received 0 points while the defector received 5 points.
- In McClure et al.'s (2007) study, mutual cooperation won both participants 2 points, if both defected, they won 1 point, and if one player cooperates and the other defects, the cooperating player wins nothing and the defecting player wins 3 points.

#### **Trust game (trust)**

- Each player is initially given 10 points; they can choose to keep all the points or invest a portion of them with a partner. Whatever portion they invest will be multiplied by 3. The partner who receives the points can choose to either keep all the points or return a portion of them to the first player.

#### **Ultimatum game (fairness)**

- A 2-player game where the first player is asked to divide 100 points between them and their partner. The partner then decides if he wants to keep or reject the points as they were divided. If he chooses to reject the offer, neither player gets any points.

#### **Public goods game (group reciprocity, punishment, and norms)**

- A 4-player game.
- In Clark et al. (2013), 10 rounds were played and there were 2 parts to each round; the number of rounds can be adjusted to suit study needs. To start each round, each player is given an initial endowment of 20 points; they then have the option of keeping their

endowment or contributing part of it to a public fund that grows at a rate of 40% of their investment, but the fund is split among players.

- In Clark et al. (2013), the experimenter played the role of the 3 other players who all contributed different amounts and all gradually converged at 17 points on round 5 to 10, which is typical of the game.

In each of these games, participants can play against other participants or against computer algorithms.

### ***The Thomas-Kilmann Conflict Mode Instrument (TKI)***

Initially developed in 1977 as the “Management-of-Differences Exercise” or MODE Instrument (Kilmann & Thomas, 1977), this measure is a forced choice tool that assesses behaviour along two dimensions, assertiveness and cooperativeness, and produces a classification of 5 categories of conflict-handling modes. Assertiveness refers to the extent to which one attempts to satisfy personal concerns. Cooperativeness refers to the extent to which one attempts to satisfy the concerns of others.

- Five modes of conflict-handling:
  - Competing: assertive and uncooperative
  - Collaborative: assertive and cooperative
  - Avoiding: unassertive and uncooperative
  - Accommodating: unassertive and cooperative
  - Compromising: intermediate in both cooperativeness and assertiveness

This measure was used in Pines et al.’s (2014) study of nursing students’ resilience and conflict management styles. It is widely used in studies on conflict management in healthcare (Pines et al., 2014).

- Internal consistency reliabilities range from .61 to .68; traditional alpha reliability is not obtainable as the TKI is ipsative (Pines et al., 2014)

### ***Questionnaire of Group Responsibility and Cooperation in Learning Teams (CRCG; Appendix A; León-del-Barco et al., 2018)***

- 14-item measure with a Likert-type response scale of 5 points, from 1 (never) to 5 (always). The measure has two dimensions:
  - Responsibility – 8 items, assesses to what extent a team is capable of fulfilling the team’s aims and obligations effectively. This factor refers to each team member’s perception of the remaining teammates with regard to their responsibility in cooperative activities.
  - Cooperation – 6 items, evaluated certain factors which allows effort to be pooled in order to achieve a particular result from the interaction with other people. This factor assesses the degree of cooperation on team tasks.



- The CRCG allows a collective average score to be obtained for different members of the group.
- This measure was piloted with a sample of 375 students (66% women and 44% men, aged 18-44, mean age = 21.3, SD = 4.6) from the Faculty of Teacher Training of the University of Extremadura, Spain.
- Cronbach's alpha was .931 for the total measure; for the Responsibility factor  $\alpha = .912$  and for the Cooperation factor  $\alpha = .847$ . The test-retest reliability coefficient was .870.

## Altruism Measures

### ***The Self-Report Altruism Scale (Roland, et al., 1981; Appendix B)***

- 20 items; self-report format.
- Response categories: never, once, more than once, often, very often
- A modified scale can be created by asking people to imagine themselves in a situation requiring altruistic behaviours.

### ***Altruistic Behaviour Questionnaire (ABQ; Leontopoulou, 2010; Appendix C)***

- 20 items; based on key concepts of altruism: sharing, helping, cooperating, and comforting, to measure children's altruistic behaviour.
- Five actions per category.
- The questions were rated on a four-point Likert-type scale: almost never, sometimes, most of the time, always.

### ***Jackson Personality Inventory—Revised (Paunonen & Jackson, 1996)***

- Measures the degree to which a person feels an obligation to other people and contains items that measures willingness to perform altruistic behaviour.
- Assessing personality traits such as: openness, neuroticism, extraversion, trustworthiness, and organization.
- 320 items (15 scales and 1 validity scale, each containing 20 items) in true/false format.
- 5 cluster scores, which are: analytical, opportunistic, emotional, extraverted, dependable and validity.

## References

- Ai, A. L., Richardson, R., Plummer, C., Ellison, C. G., Lemieux, C., Tice, T. N., & Huang, B. (2013). Character strengths and deep connections following Hurricanes Katrina and Rita: Spiritual and secular pathways to resistance among volunteers. *Journal for the Scientific Study of Religion*, 52(3), 537-556.
- Aldrich, D. P., & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, 59(2), 254–269. <https://doi.org/10.1177/0002764214550299>
- Andreoni, J., Rao, J. M., & Trachtman, H. (2017). Avoiding the ask: A field experiment on altruism, empathy, and charitable giving. *Journal of Political Economy*, 125(3), 625-653.
- Ashton, M. C., Paunonen, S. V., Helmes, E., & Jackson, D. N. (1998). Kin altruism, reciprocal altruism, and the Big Five personality factors. *Evolution and Human Behavior*, 19(4), 243-255.
- Barragan, R. C., & Dweck, C. S. (2014). Rethinking natural altruism: Simple reciprocal interactions trigger children’s benevolence. *Proceedings of the National Academy of Sciences*, 111(48), 17071-17074.
- Batson, C. D. (2014). *The altruism question: Toward a social-psychological answer*. Psychology Press.
- Byrne, N. (2008). Differences in types and levels of altruism based on gender and program. *Journal of Allied Health*, 37(1), 22-29.
- Clark, B. C., Thorne, C. B., Hardy, S., & Cropsey, K. L. (2013). Cooperation and depressive symptoms. *Journal of Affective Disorders*, 150(3), 1184–1187. <https://doi.org/10.1016/j.jad.2013.05.011>
- Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology*, 104(4), 1189–1204. <https://doi.org/10.1037/a0029356>
- Constantine, N. A., Benard, B., Diaz, M., Constantine, N. A., & D, P. (1999). Measuring protective factors and resilience traits in youth: The healthy kids resilience assessment. Paper presented at the Seventh Annual Meeting of the Society for Prevention Research.
- Cozzolino, P. J. (2011). Trust, cooperation, and equality: A psychological analysis of the formation of social capital. *British Journal of Social Psychology*, 50(2), 302–320. <https://doi.org/10.1348/014466610X519610>
- Craighead, L. W. (2013). Cognitive-based compassion training: A promising prevention strategy for at-risk adolescents. *Journal of Child and Family Studies*, 22(2), 219-230.
- Deutsch, M. (2011). Cooperation and Competition. In P. T. Coleman (Ed.), *Conflict, Interdependence, and Justice: The Intellectual Legacy of Morton Deutsch* (pp. 23–40). Springer. [https://doi.org/10.1007/978-1-4419-9994-8\\_2](https://doi.org/10.1007/978-1-4419-9994-8_2)
- Ervin, R. A., Miller, P. M., & Friman, P. C. (1996). Feed the Hungry Bee: Using Positive Peer Reports to Improve the Social Interactions and Acceptance of a Socially Rejected Girl in

- Residential Care. *Journal of Applied Behavior Analysis*, 29(2), 251–253.  
<https://doi.org/10.1901/jaba.1996.29-251>
- Ervin, R. A., Johnston, E. S., & Friman, P. C. (1998). Positive peer reporting to improve the social interactions of a socially rejected girl. *Proven practice: prevention and remediation solutions for school problems*, 1, 17-21.
- Etxebarria, I., Apodaka, P., Eceiza, A., Ortiz, M. J., Fuentes, M. J., & López, F. (1994). Design and Evaluation of a Programme to Promote Prosocial-Altruistic Behaviour in the School. *Journal of Moral Education*, 23(4), 409-425.
- Fleury, V. P., Miramontez, S. H., Hudson, R. F., & Schwartz, I. S. (2014). Promoting active participation in book reading for preschoolers with Autism Spectrum Disorder: A preliminary study. *Child Language Teaching and Therapy*, 30(3), 273–288.  
<https://doi.org/10.1177/0265659013514069>
- Friborg, O., Hjemdal, O., Rosenvinge, J. H., & Martinussen, M. (2003). A new rating scale for adult resilience: What are the central protective resources behind healthy adjustment? *International Journal of Methods in Psychiatric Research*, 12(2), 65–76.  
<https://doi.org/10.1002/mpr.143>
- Gilbert, P. (2009). Introducing compassion-focused therapy. *Advances in Psychiatric Treatment*, 15(3), 199.
- Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology*, 53(1), 6-41.
- Giner Torrés, M., & Kärtner, J. (2017). The influence of socialization on early helping from a cross-cultural perspective. *Journal of Cross-Cultural Psychology*, 48(3), 353-368.
- Gorucu, A. (2016). The Investigation of the Effects of Physical Education Lessons Planned in Accordance with Cooperative Learning Approach on Secondary School Students' Problem Solving Skills. *Educational Research and Reviews*, 11(10), 998–1007.
- Goudas, M., & Magotsiou, E. (2009). The Effects of a Cooperative Physical Education Program on Students' Social Skills. *Journal of Applied Sport Psychology*, 21(3), 356–364.  
<https://doi.org/10.1080/10413200903026058>
- Hjemdal, O., Friborg, O., Stiles, T. C., Martinussen, M., & Rosenvinge, J. H. (2006). A New Scale for Adolescent Resilience: Grasping the Central Protective Resources Behind Healthy Development. *Measurement and Evaluation in Counseling and Development*, 39(2), 84–96. <https://doi.org/10.1080/07481756.2006.11909791>
- Huber, J. T., & MacDonald, D. A. (2012). An investigation of the relations between altruism, empathy, and spirituality. *Journal of Humanistic Psychology*, 52(2), 206-221.
- Isaacs, K., Mota, N. P., Tsai, J., Harpaz-Rotem, I., Cook, J. M., Kirwin, P. D., Krystal, J. H., Southwick, S. M., & Pietrzak, R. H. (2017). Psychological resilience in US military veterans: A 2-year, nationally representative prospective cohort study. *Journal of Psychiatric Research*, 84, 301-309.
- Jackson, D., Hutchinson, M., Everett, B., Mannix, J., Peters, K., Weaver, R., & Salamonson, Y. (2011). Struggling for legitimacy: Nursing students' stories of organisational aggression,

- resilience and resistance. *Nursing Inquiry*, 18(2), 102–110.  
<https://doi.org/10.1111/j.1440-1800.2011.00536.x>
- Johnson, D. W., & Johnson, R. T. (2005). New Developments in Social Interdependence Theory. *Genetic, Social, and General Psychology Monographs*, 131(4), 285–358.  
<https://doi.org/10.3200/MONO.131.4.285-358>
- Johnson, D. W., & Johnson, R. T. (2009). An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning. *Educational Researcher*, 38(5), 365–379. <https://doi.org/10.3102/0013189X09339057>
- Jones, K. M., Young, M. M., & Friman, P. C. (2000). Increasing peer praise of socially rejected delinquent youth: Effects on cooperation and acceptance. *School Psychology Quarterly*, 15(1), 30–39. <https://doi.org/10.1037/h0088776>
- Kilmann, R. H., & Thomas, K. W. (2016). Developing a Forced-Choice Measure of Conflict-Handling Behavior: The ‘Mode’ Instrument: Educational and Psychological Measurement. <https://doi.org/10.1177/001316447703700204>
- Kim, S. Y., Rispoli, M., Lory, C., Gregori, E., & Brodhead, M. T. (2018). The Effects of a Shared Reading Intervention on Narrative Story Comprehension and Task Engagement of Students with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 48(10), 3608–3622. <https://doi.org/10.1007/s10803-018-3633-7>
- Kirschner, S., & Tomasello, M. (2010). Joint music making promotes prosocial behavior in 4-year-old children. *Evolution and Human Behavior*, 31(5), 354–364.  
<https://doi.org/10.1016/j.evolhumbehav.2010.04.004>
- Klimecki, O. M., Leiberg, S., Lamm, C., & Singer, T. (2013). Functional neural plasticity and associated changes in positive affect after compassion training. *Cerebral Cortex*, 23(7), 1552-1561.
- Köster, M., Cavalcante, L., Vera Cruz de Carvalho, R., Dôgo Resende, B., & Kärtner, J. (2016). Cultural influences on toddlers’ prosocial behavior: How maternal task assignment relates to helping others. *Child development*, 87(6), 1727-1738.
- Krebs, D. (1975). Empathy and altruism. *Journal of Personality and Social psychology*, 32(6), 1134.
- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PloS One*, 6(3), e17798.
- León-del-Barco, B., Mendo-Lázaro, S., Felipe-Castaño, E., Fajardo-Bullón, F., & Iglesias-Gallego, D. (2018). Measuring Responsibility and Cooperation in Learning Teams in the University Setting: Validation of a Questionnaire. *Frontiers in Psychology*, 9.  
<https://doi.org/10.3389/fpsyg.2018.00326>
- Leontopoulou, S. (2010). An exploratory study of altruism in Greek children: Relations with empathy, resilience and classroom climate. *Psychology*, 1(05), 377.
- Lietz, C. A. (2011). Empathic action and family resilience: A narrative examination of the benefits of helping others. *Journal of Social Service Research*, 37(3), 254-265.

- Lozada, M., D'Adamo, P., & Carro, N. (2014). Plasticity of altruistic behavior in children. *Journal of Moral Education, 43*(1), 75-88.
- López-Fuentes, I., & Calvete, E. (2015). Building resilience: A qualitative study of Spanish women who have suffered intimate partner violence. *American Journal of Orthopsychiatry, 85*(4), 339
- McAndrew, F. T. (2002). New evolutionary perspectives on altruism: Multilevel-selection and costly-signaling theories. *Current Directions in Psychological Science, 11*(2), 79-82.
- McClure, E. B., Parrish, J. M., Nelson, E. E., Easter, J., Thorne, J. F., Rilling, J. K., Ernst, M., & Pine, D. S. (2007). Responses to Conflict and Cooperation in Adolescents with Anxiety and Mood Disorders. *Journal of Abnormal Child Psychology, 35*(4), 567–577.  
<https://doi.org/10.1007/s10802-007-9113-8>
- Mucchetti, C. A. (2013). Adapted shared reading at school for minimally verbal students with autism. *Autism, 17*(3), 358–372. <https://doi.org/10.1177/1362361312470495>
- Neal, R., Bell, S., & Wilby, J. (2011). Emergent disaster response during the June 2007 floods in Kingston upon Hull, UK. *Journal of Flood Risk Management, 4*(3), 260-269.
- Nopembri, S., Sugiyama, Y., Saryono, & Rithaudin, A. (2019). Improving stress coping and problem-solving skills of children in disaster-prone area through cooperative physical education and sports lesson. <https://doi.org/10.14198/jhse.2019.141.15>
- Paerregaard, K. (2015). The resilience of migrant money: how gender, generation and class shape family remittances in Peruvian migration. *Global Networks, 15*(4), 503-518.
- Paunonen, S. V., & Jackson, D. N. (1996). The Jackson Personality Inventory and the five-factor model of personality. *Journal of Research in Personality, 30*(1), 42-59.
- Pines, E. W., Rauschhuber, M. L., Cook, J. D., Norgan, G. H., Canchola, L., Richardson, C., & Jones, M. E. (2014). Enhancing Resilience, Empowerment, and Conflict Management Among Baccalaureate Students: Outcomes of a Pilot Study. *Nurse Educator, 39*(2), 85–90. <https://doi.org/10.1097/NNE.000000000000023>
- Rushton, J. P. (1976). Socialization and the altruistic behavior of children. *Psychological Bulletin, 83*(5), 898.
- Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). The altruistic personality and the self-report altruism scale. *Personality and Individual Differences, 2*(4), 293-302.
- Schefczyk, M., & Peacock, M. (2010). Altruism as a thick concept. *Economics and Philosophy, 26*(2), 165-187.
- Staub, E., & Vollhardt, J. (2008). Altruism born of suffering: The roots of caring and helping after victimization and other trauma. *American Journal of Orthopsychiatry, 78*(3), 267-280.
- Street, H., Hoppe, D., Kingsbury, D., & Ma, T. (2004). The Game Factory: Using Cooperative Games to Promote Pro-Social Behaviour among Children. *Australian Journal of Educational & Developmental Psychology, 4*, 97–109.
- Tanyag, M. (2018). Resilience, female altruism, and bodily autonomy: Disaster-induced displacement in post-Haiyan Philippines. *Signs: Journal of Women in Culture and Society, 43*(3), 563-585.

- Wallmark, E., Safarzadeh, K., Daukantaitė, D., & Maddux, R. E. (2013). Promoting altruism through meditation: an 8-week randomized controlled pilot study. *Mindfulness, 4*(3), 223-234
- Warneken, F., Hare, B., Melis, A. P., Hanus, D., & Tomasello, M. (2007). Spontaneous altruism by chimpanzees and young children. *PLoS Biology, 5*(7), e184.
- Weng, H. Y., Fox, A. S., Shackman, A. J., Stodola, D. E., Caldwell, J. Z., Olson, M. C., Rogers, G. M., & Davidson, R. J. (2013). Compassion training alters altruism and neural responses to suffering. *Psychological Science, 24*(7), 1171-1180.
- White, R. (2011). A sociocultural understanding of mediated learning, peer cooperation and emotional well-being. *Emotional and Behavioural Difficulties, 16*(1), 15–33.  
<https://doi.org/10.1080/13632752.2011.545600>

## Appendix A: Questionnaire of Group Responsibility and Cooperation in Learning Teams

León-del-Barco et al. (2018)

Response scale: 1 (never) to 5 (always)

### Factor 1: Responsibility

1. My teammates have put out maximum effort
2. My teammates have worked hard on the team
3. My teammates have performed well as a work team
4. My teammates have behaved responsibly
5. My teammates have worked responsibly so the group will reach the goals and perform the tasks
6. My teammates have organized and coordinated themselves efficiently
7. My teammates have prepared their share of the work efficaciously
8. My teammates have contributed important information to the group

### Factor 2: Cooperation

9. My teammates have encouraged the others
10. My teammates have positively solved the conflicts and problems in the group
11. My teammates have accepted criticism and suggestions positively
12. My teammates have acted with solidarity and a high degree of cohesion
13. My teammates have collaborated simultaneously in the performance of the tasks
14. My teammates have cooperated with each other

## Appendix B: Self-report Altruism Scale

Roland et al. (1981)

Pick the category on the right that conforms to the frequency with which you have carried out the following acts

	Never	Once	More than once	Often	Very often
I have helped push a stranger's car out of the snow					
I have given directions to a stranger					
I have made change for a stranger					
I have given money to a charity					
I have given money to a stranger who needed it (or asked me for it)					
I have donated goods or clothes to a charity					
I have done volunteer work for a charity					
I have donated blood					
I have helped carry a stranger's belongings (books, parcels, etc.)					
I have delayed an elevator and held the door open for a stranger					
I have allowed someone to go ahead of me in a line up					
I have given a stranger a lift in my car					
I have pointed out a clerk's error in under-changing me for an item (in a bank, at the supermarket)					
I have let a neighbour whom I did not know too well borrow an item of some value to me					
I have bought 'charity' cards deliberately because I knew it was a good cause					
I have helped a classmate who I did not know that well with a homework assignment when my knowledge was greater than his or hers					
I have before being asked, voluntarily looked after a neighbour's pets or children without being paid for it					
I have offered to help a handicapped or elderly stranger across a street					



I have offered my seat on a bus or train to a stranger who was standing					
I have helped an acquaintance to move households					

## Appendix C: Altruistic Behaviour Questionnaire

Leontopoulou (2010)

Below are some sentences that describe ways with which children of your age sometimes behave toward others. We would like you to tell us how often you behave in the way that each sentence suggests. For example:

Do you apologise to a classmate when you done something to upset him/her?

Almost never

Sometimes

Most of the time

Always

1. Do you offer something you own (e.g. pencil, rubber) to a classmate when he/she needs it?
2. Do you help a classmate when he/she has trouble with an exercise?
3. Do you try to make a classmate happy by playing with him/her or by saying a joke?
4. Do you cooperate with your classmates to achieve a good goal or target?
5. Do you and your classmates talk about how your vacations went?
6. Do you help two classmates when you see them having an argument?
7. Do you keep company to a classmate that is hurt during a game and cannot play with the rest of the team?
8. Do you invite a classmate who plays on his/her own to join you and your friends?
9. If you have candy or gum, do you offer any to your friends?
10. Do you protect your (younger) classmates when they find themselves in a difficult situation?
11. Do you spontaneously hug your classmates to show them how much you care about them?
12. When you play team games, do you choose to have a classmate in your team, even if he/she is not your friend?
13. Do you offer your seat to an adult at a school function?
14. Do you show a classmate how to play a sport he/she does not know how?
15. Do you reassure a classmate when he/she agonises over something that troubles him/her?
16. Do you let another classmate to be the leader in the various games you play?
17. Do you share with your classmates a secret or a problem you have?
18. Do you help a new kid at school to feel more at home (e. g. keep him/her company, help him/her with schoolwork)?
19. Do you comfort a classmate who has received a poor mark in a course and is upset?
20. Do you keep quiet during class so that you don't bother your classmates?



For more information about R2 or to discover how you can bring the program to your organization, business or educational setting, please contact us.

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