

# **Relationships between emotions and disruptive behaviour in physical education - a systematic literature review**

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## **Abstract**

*Classroom disruptions and disruptive behaviour occur frequently in physical education and can constitute important psychological stress factors. However, so far, the relationships between disruptive behaviour and emotions in physical education have not been studied in detail. Therefore, a systematic literature review was conducted, to explore these relationships. Studies were selected through a systematic literature search from the databases Pubmed, Web of Science, ERIC, BISP, and SCOPUS. Twelve articles met the specified inclusion criteria. Results show that anger is a well investigated emotion in this context, but psychological constructs such as boredom or low intrinsic motivation to participate in class also were described as leading to disruptions. In accordance with Lazarus's theory on emotions extended by the model of emotional contagion, a first conceptual model of relationships between teachers' and students' emotions regarding the identified typical disruptive behaviour in physical education is derived.*

*Keywords:* emotion, classroom disruption, disruptive behaviour, discipline, physical education

## **Introduction**

Classroom disruptions and disruptive behaviours occur frequently in schools (Álvarez Martino et al., 2016 & Hattie, 2009). Physical education seems particularly often affected, probably because of its different focus on moving and physical contacts where students are not bound to seats and able to move around more or less freely. In addition, there are situations prone to disruptions, such as when the teacher does not have an overview of all students, for example, in the changing rooms or when dismantling equipment and bringing it back into the storage room (Moen et al., 2018). Such lesson disruptions may be related to the participants' emotional states (students and teachers), since the emotion-based behaviour of teachers as well as that of students seems to play an important role in the development of disruptive behaviour (Krekar et al., 2019). Further, each teacher and student can perceive each classroom disruption with a different intensity, and these disruptions can constitute important psychological stress

factors (Krekar et al., 2019). As both teachers and students have limited resources (e.g. time, motivation, strategies), classroom disruptions result in a high level of psychological stress if not dealt with adequately (Álvarez Martino et al., 2016). However, so far, the relations between emotions and disruptive behaviour in physical education have not been studied in detail. Therefore, a systematic literature review was conducted, to explore the relationships between emotions and disruptive behaviour in physical education. To obtain a conceptual overview of the research field, a theoretical framework of the relevant areas concerning emotions and disruptive behaviour is given, followed by the state of empirical research and the presentation of the methodical procedures. In a final step, the results are reported and subsequently discussed.

## **Theoretical framework**

What constitutes classroom disruptions and disruptive behaviour is defined by subjective perception and, therefore, varies from individual to individual (Krekar et al., 2019). While one person may perceive a situation as a disruption, another may interpret the same situation differently and not feel disturbed at all (Nash et al., 2016). For example, a lack of eagerness to learn may not be intentionally disruptive on the part of the students but perceived as a disruption by the teacher. Accordingly, classroom disruptions are defined not as an objective phenomenon, but as a subjective appraisal of the situation. These disparities in appraisal are not only relevant from the teacher's point of view, but also from the students' perspective, because both can play a role in the development of classroom disruptions.

According to Sun and Shek (2012), there are several types of disruptions initiated by students, including verbal disruptive behaviour, lack of eagerness to learn, motor restlessness, and aggressive behaviour. Students' disciplinary difficulties and antisocial behaviour are as much a part of classroom disruptions and disruptive behaviour as a lack of collaboration, cooperation, and interaction with the teacher. However, disruptive students are not always solely the cause of a classroom disruption. Teachers also contribute to classroom disruptions. For example, planning interesting lessons, the inclusion of and interaction with students in the planning, as well as establishing a suitable learning environment are factors that can be controlled by the teacher. Therefore, classroom disruptions are a multifaceted event which cannot always be traced back to just one cause or one group of participants. Rather, it is a product of the complex interplay of students' and teachers' behaviours in combination with the various settings and their resulting situations.

Emotions are a hypothetical, not a directly observable construct. Nevertheless, they are expressed by facial expressions, gestures, posture, voice etc. They consciously and unconsciously control behaviour. Within the context of learning, emotions influence the memory processes as well as judgment and information processing strategies. They also influence perception and form the core of personality (Ekman, 1994). The seven basic emotions that every human being possesses are: Joy, anger, disgust, fear, contempt, sadness and surprise (Ekman, 1993;1994).

There are several models in the literature that describe what emotions are. Furley and Laborde (2019) present an overview of different existing models and theories, distinguishing between dimensional models and categorical models. In the former, emotions are spanned between two or more extremes (Feldman-Barrett, 1998; Russell, 1980). In the categorical models, emotions can be regarded as discrete, because they can

be distinguished by body expressions (e.g. Ekman, 1993), cognitive processes (e.g. Lazarus, 1991a) and biological processes (LeDoux, 1998).

In this review, the appraisal theory developed by Lazarus (1991) provides the theoretical basis, because of its suitability for describing the process of disruptions in classrooms. According to Lazarus (1991b), emotions represent a transaction between situational and personal factors. Individuals appraise the situation in two steps. In the primary appraisal, a person evaluates the situation by how relevant what is currently happening is to their own goals, values, and beliefs. In the second appraisal, the person evaluates their options on how to deal with the situation. An emotion is elicited as a product, which enables the individual to adapt to the situation and deal effectively with the challenges of the environment.

In contrast to the theory of basic emotions (e.g. Ekman, 1994), Lazarus postulates that emotions are a purely cognitive process and result from the complex interplay of the appraisal of a (new) situation and the anticipation of what one can expect from the situation (Lazarus, 1991b). When adapting Lazarus's theory to the school environment it is crucial to notice that both, teachers and students, develop individual emotions when they face new classroom situations. Both parties develop these emotions based on the subjective impression of whether they can or cannot cope with the situation. It is therefore important to consider the complex interplay of emotions and the subjective assessments of the situation when thinking about the development and intensity of classroom disruptions.

In addition to Lazarus's model, a second theory will be considered in the context of this review, that of emotional contagion, as this phenomenon plays a major role in the interaction between teachers and students. Emotional contagion is when the emotions of one person trigger similar emotions and behaviours in other people. This happens mostly unconsciously (Barsade, 2002; Prochazkova & Kret, 2017). Teachers as well as students tend to copy others' emotions. It is likely that a calm teacher might transfer his/her emotions to the class and calm them down. The opposite is possible as well, the class copies, for example, the emotions of an angry or stressed teacher and starts to be restless and aroused too. Furthermore, the emotional contagion theory states that this process happens in both directions, so it is very likely that the teacher is adapting to the emotions of the classroom as well. Especially in physical education, there are many emotions that can be unconsciously transferred from the teacher to the students and vice versa. Due to this mutual influence of each other a cycle of emotions can develop. In addition, it is possible that emotional contagion comes into play in the case of an already existing classroom disruption and that the transfer of emotions to the students or to the teachers either calms the situation or causes it to escalate further (Barsade, 2002; Prochazkova & Kret, 2017).

*State of empirical research.* In the early 2000s, Sutton and Wheatley (2003) noted that teachers' emotions had been relatively poorly researched. To narrow this gap, Chang published a review in 2009 on the literature of the past 30 years covering the topic of teacher burnout, which integrated the field of emotions into the school context. In this review, Chang (2009) noted that an important factor in teacher burnout is the disruptive behaviour of students in class. A decade later, Lee focused on teacher burnout in physical education and concluded that there is clearly a connection between burnout and classroom disruptions (Lee, 2019).

Besides teachers, students are also the target group of various research studies in this area. As early as 2000, Heckaman et al. (2000) examined the intervention research

conducted among students with, or at risk of, emotional or behavioural disorders in school. They found twenty- two studies, a majority of which showed positive results, but the lack of specific trends regarding the type or selection and implementation of interventions indicated that there is still some research potential in this area (Heckaman et al., 2000). A year later, Musser et al. (2001) addressed this gap in the research and published a study on the reduction of disruptive behaviour from students with severe emotional disorders. Their multicomponent intervention reduced the amount of disruptive behaviour and created a sense of satisfaction among teachers as well as students. In 2005, Sutherland and Oswald found that evidence for the existence of transactions between teachers and students with emotional and behavioural disorders, and that teacher behaviour and student behaviours have a mutual dynamic relationship (Sutherland & Oswald, 2005). The issue of social, emotional and behavioural difficulties in students was discussed in detail in a review by Cooper (2011). In 2014, Lu and Buchanan, with a focus on emotional development, linked their study of students' emotions to physical education, on which the school had a strong influence.

After analysing the state of research, it can be concluded that although the relationships between emotions and physical education, and the relationship between emotions and classroom disruptions have been examined in previous literature there remained a need to investigate the relationships between all three variables namely the relationships between emotions and disruptive behaviour in physical education. Therefore, the following research question was addressed: Are teachers' and students' emotions related to disruptions in physical education, and if so, how are which emotions related to these disruptions?

## **Method**

**Eligibility criteria and study selection.** Before being included in the review, each study was checked for consistency with the selected topic. The requirement was that the study dealt with all three sub-areas - emotions, classroom disruptions and physical education - and linked them together. Emotions meant at least one emotion, e.g. anger, boredom, etc., was mentioned in the results of the study as a relevant reason or part of the argumentation. Whether the emotion was interpreted as positive or negative had no relevance for the selection. Studies were chosen when physical education was mentioned as a compulsory part of the students' timetable. Studies that examined teachers' and students' emotions were included. Furthermore, the aspect of "discipline" was included under the assumption that in the absence of discipline a classroom disruption can occur with a higher frequency. Studies that were not available in English were excluded. As this is one of the first reviews in this field of research, no limits were set on studies' execution or publication dates. No explicit age limit was set for the searches in the databases for the study participants, as both teachers and students were included. However, the age of the student participants was limited so that only children and adolescents who were still in school and thus attending physical education classes were included. For the sake of completeness, no study designs were excluded.

*Search Strategy.* To identify suitable studies, a literature research was conducted in the electronic databases Web of Science, PubMed, SCOPUS, ERIC and BISp (oldest possible date – today). All searches were carried out for matches of the search terms (outlined below) in titles, abstracts and keywords. This search was performed on 06 April 2020. The search terms are presented in table 1, consisting of three parts connected

with “AND”. In some databases, the search term had to be split up. A combination matrix was used to find all possible combinations of shorter search terms.

Table 1

*Search terms*

Setting	<i>"physical education" OR "gym instructions"</i>
Emotion	<i>emotion* OR "affect" OR "affective state" OR "interest" OR "concern" OR "boredom" OR "less common" OR "boringness" OR "ennui" OR "tedium" OR "stuffiness" OR "rage" OR "rapidness" OR "fury" OR "anger" OR "temper" OR "furor" OR "wrath" OR "fume" OR "furore" OR "angriness" OR "irateness" OR "ire" OR "furiousness" OR "rapidness" OR "incensement" OR "spleen" OR "anxiety" OR "fear" OR "fright" OR "cowardice" OR "worry" OR "phobia" OR "alarm" OR "anguish" OR "trepidation" OR "dread" OR "shame" OR "pubis" OR "pubis satisfaction" OR "private parts" OR "embarrassment" OR "humiliation" OR "abashment"</i>
Disruption	<i>"teaching difficult*" OR "teaching disruptions" OR "classroom disruption" OR "disruption" OR "discipline" OR "disciplinary problem" OR "disturbance" OR "disruptive behaviour" OR "Deviant behaviour" OR "divergent behaviour" OR "deviant conduct" OR "violence"</i>

*Data extraction.* After transferring the results to Citavi, the results were screened by title, followed by screening by abstract and finally by full text. The search in the five databases yielded 5691 ‘hits’. After eliminating duplicates, the titles and abstracts of 5460 identified articles were reviewed for eligibility in two rounds based on the inclusion criteria defined above. Another study that met the criteria for inclusion was identified through the snowball system. Thus, a total of 26 titles was included in the full text screening. Of these, a further 14 studies were excluded. The study selection process is shown in Figure 1. Twelve studies met the inclusion criteria of this review.

The eligibility test was conducted independently and standardized by two reviewers. The criteria were previously defined as described above. A consensus was sought in the case of different interpretations of the experts. Data extraction from the relevant studies was carried out separately by both reviewers. The data were then compared and discursively adjusted. The results are summarised in table 3.

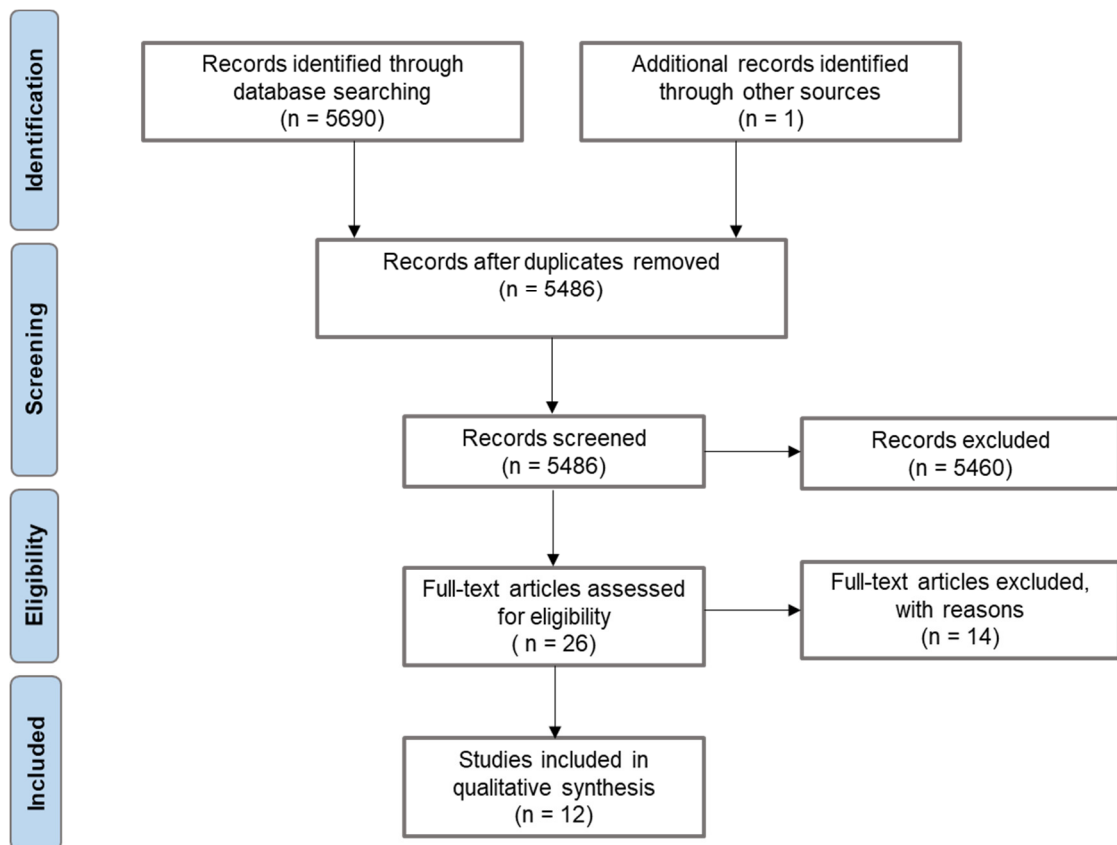


Figure 1. Study selection process flow chart.

*Quality assessment.* The quality assessment of the included studies was carried out by two authors. The assessment tool for Cross-Sectional Studies (AXIS) was used for the quantitative studies and twenty quality criteria were applied. The result of this evaluation is reported in table 2. Not a single study was classified as weak and only one as medium-weak. However, it is also noticeable that the presentation of results in the studies did have some weaknesses. In not a single study was the presentation of results rated as good. The second area weakness was found in the discussion, with only three of the studies being considered moderate. All in all, the quality of the studies was medium-good.

The qualitative studies were evaluated using the quality assessment tool by Garside (2014). This evaluation included trustworthiness, the inclusion of theoretical considerations, and practical considerations. According to these criteria, the studies of Ayme et al. (2009), Fernández-Balboa (1991) and Supaporn (2000) can be classified as "good" (in the qualitative area), while the studies of Cothran and Ennis (1997) as well as that of Cothran et al. (2003) can be classified as "medium".

Table 2

*Quality-assessment of the eight quantitative studies based on the assessment tool for Cross-Sectional Studies (AXIS)*

Studies	Introduction	Method	Results	Discussion	Overall
Ayme et al. (2009)	1/1 yes	7/10 yes 1/10 no 2/10 n. A.	3/5 yes 1/5 no 1/5 n.S.p.	3/4 yes 1/4 no	Good
Bekiari et al. (2006)	1/1 yes	9/10 yes 1/10 n.S.p.	3/5 yes 2/5 n.S.p.	3/4 yes 1/4 no	Good
Cothran & Kulinna (2007)	1/1 yes	9/10 yes 1/10 n.S.p.	3 /5 yes 2/ 5 n.S.p.	3 /4 yes 1 / 4 no	Good
Granero-Gallegos et al. (2019)	1/1 yes	8/10 yes 2/10 n. A.	1/5 yes 1/5 no 3/5 n.S.p.	2/4 yes 2/4 no	median-weak
Hein et al. (2015)	1/1 yes	6/10 yes 2/10 no 2/10 n.S.p.	3/5 yes 2/5 no	3/4 yes 1/4 no	median-good
Kullina, Cothran & Regualos (2006)	1/1 yes	7/10 yes 3/10 no	3/5 yes 1/5 no 1/5 n.S.p.	2/4 yes 2/4 no	median-good
Papaioannou (1998)	1/1 yes	9/10 yes 1/10 n.S.p.	3/5 yes 1/5 no 1/5 n.A	2/4 yes 2/4 no	median-good
Simonton & Garn (2020)	1/1 yes	9/10 yes 1/10 no	3/5 yes 2/5 n.S.p.	3/4 yes 1/4 no	Good

## Results

The aim of this review was to explore and present the current state of research on the relationships between emotions and classroom disruptions in physical education. The following results are guided by the research question: Are teachers' and students'

emotions related to disruptions in physical education, and if so, how are which emotions related to these disruptions?

All included studies show that teachers' and students' emotions can be related to disruptions in physical education. Looking at these relationships more closely, the emotion "anger" and its relationships to disruptions in physical education were most frequently investigated. Five studies focused on either teachers or students displaying anger, regardless of whether the aim of the study was to find out the causes of anger (Ayme et al., 2009) or the effects (Bekiari et al., 2006). Although anger is often involved in disruptions, other emotions or other psychological constructs have also been identified as causes: a low (intrinsic) motivation (Bekiari et al., 2006; Granero-Gallegos et al., 2019; Papaioannou, 1998), dissatisfaction with the existing power relationships between students and teachers (Cothran & Ennis, 1997), boredom and the resulting desire of attention as well as uncertainty about one's own abilities and person, fear, respect, disinterest and shame (Cothran & Kulinna, 2007; Cothran et al., 2003; Fernández-Balboa, 1991, Simonton & Garn, 2020; Supaporn, 2000).

In all studies the teacher is seen as a decisive factor in the development of disruptions in the classroom. The emotional behaviour of teachers in relation to the occurrence of disruptions in the classroom is particularly highlighted in ten studies. Among the emotions that teachers show in this context are fear of losing their authority over students and the resulting anger when they do so (Ayme et al., 2009), and verbal aggression (Bekiari et al., 2006). From the student perspective aversion to the teacher is identified as a factor (Cothran & Kulinna, 2007).

The importance of subjective perception is highlighted. Kulinna and Cothran (2006) state that gender differences exist among teachers in interpreting the severity of classroom disruptions. In addition, teachers' convictions and attitudes that misbehaviour is a part of everyday school life and cannot be prevented, shape teacher behaviour (Fernández-Balboa, 1991). Some teachers already start with an emotionally negative mindset, which leads to different teaching strategies in comparison to when they have a more positive basic tendency. Papaioannou (1998) shows that there is a significant positive correlation between the strategies used by teachers and the discipline in class. Seven studies analysed students as a component of classroom disruptions in physical education. The misbehaviour of students is identified as a cause of teacher anger and frustration (Ayme et al., 2009). However, dissatisfaction with the teacher (Bekiari et al., 2006) and the feeling that students have less power and influence in class than teachers (Cothran & Ennis, 1997) have been described as leading to the emotion of anger and as reasons for student misbehaviour and causes of disruptions. From the students' perspective, the main responsibility for the interruptions lies with the teachers who conduct their lessons boringly (Cothran & Kulinna, 2007). The types of perceived misbehaviour were significantly related to individual factors like gender, age, and race. Girls reported misbehaviour more often, boys reported other reasons for misbehaviour, but overall, girls and boys disrupted the lessons equally (Cothran & Kulinna, 2007).

Looking at teachers and students in combination, a strong inter-dependency is noticeable. The teacher's view of the students and vice versa played an important role in the anticipation and perception of disruptions in the classroom. This led to subsequent selections of teaching or classroom management strategies. A connection between negative teacher behaviour and the resulting classroom disruptions was found in Cothran et al. (2003), who state that teacher behaviour is reflected in student behaviour. However, this does not seem to be perceived by either students or teachers, as the reasons for disruptions in physical education are generally sought and found on the other



side (Fernández-Balboa,1991). Certainly, if there is a lack of mutual respect between the two parties, disruptions in teaching can occur more often (Cothran & Ennis, 1997). The studies show that the aspect of authority needs to be considered when trying to prevent disruptive behaviour. If the teacher shows too little authority, e.g., the non-implementation of consequences or if the behaviour of the teacher is too strict, this may lead to a lack of respect by the students. This often results in disrespectful behaviour, which in turn leads to disruptions (Cothran, et al., 2003). Granero-Gallegos et al. (2019), found that the number of disruptions decrease when the teacher is perceived as competent by the students. Interestingly, Cothran et al. (2003) and Supaporn (2000) have found that positive emotions, such as fun and a positive relationship between students and teachers, can prevent disruptions and disruptive behaviour.

## **Discussion**

The aim of this systematic review was to find out, whether teachers' and students' emotions are related to disruptions in physical education, and if so, how which emotions are related. Various relations between emotions and disruptive behaviour in physical education were identified. It is striking that only two of the seven basic emotions, namely anger and fear, were the focus of the studies. The emotion "anger" has played an important role in the research on this topic. Regardless of whether teachers' or students' feelings were studied, anger and classroom disruptions in physical education seem to have an important relationship. A possible explanation for anger being mentioned so often is that many other emotions lead to anger, because anger is stated as a secondary emotion (Lazarus, 1991a). This may be explained by Lazarus's (1991) model in which anger can be the result of the cognitive evaluation of the situation. Both teachers and students, often start with a prebuilt expectation for the lesson. This assumption can be positive or negative (primary appraisal, according to Lazarus). Once in the situation they appraise it cognitively, e.g., when the teacher has a limit within which the students can act in terms of bad behaviour. Once the limit is reached, the teacher cannot handle the situation any longer (secondary appraisal), which leads to stress for the teacher. This could explain why anger is such a frequently occurring and researched emotion. In addition to Lazarus's (1991a) transactional model, emotional contagion (Barsade, 2002; Prochazkova & Kret, 2017) also contributes to an explanation for these results. The emotion of anger that one side feels, regardless of whether the other party is responsible for it, is perceived and adopted by the other side.

It is striking that in all studies the causes of disruption are mostly connected to teacher-student relationships rather than sport-related emotions and disruptions, such as outbursts of sadness over a lost game or disobedience to rules. The emotions that go along with teaching disruptions seem to be strongly related to the students' satisfaction with the teaching. If the lessons and topics are interesting, they see little reason to disrupt the lessons. The intrinsic motivation of students, shame, anger, and boredom have been identified as causes for such disruptions. The latter emotions of the students often develop when they feel that they are not appreciated or respected by the teacher. Again, Lazarus's (1991a) theory can explain the connection between negative emotions and the lack of intrinsic motivation and classroom disruptions in physical education. Hence, at first, the students make an evaluation of the situation. If this is negative, e.g., when the students do not feel respected enough, this leads to an angry response, followed by disruptions to the lesson.

Thus, it can be concluded that disruptive behaviour in the classroom is decisively intertwined between both students and teachers. The teacher's view of the students and vice versa plays an important role in the teaching strategies that are applied. If the teacher has a good relationship with the students, it is easier to involve the students in lesson planning, which leads to more interesting lessons in which the students are less bored and less prone to disruptive behaviour. In contrast, both teachers with too much authority as well as those with too little, can cause emotional tension between themselves and students and thus disruptive behaviour will ensue. The teacher-student relationship is a fragile balance in which both sides are responsible for maintaining a healthy relationship of mutual respect to provide a trouble-free physical education class. This relationship is supported by the emotional contagion model (Barsade, 2002; Prochazkova & Kret, 2017). The different feelings of teachers and students are adopted by their counterpart and can thus either improve or worsen the relationship. Therefore, the relationship between teachers and students plays an important role in the development of disruptions in the classroom (Hattie, 2009). However, it appears that both teachers and students tend to look for faults on the other side, instead of reflecting on their own influence in the situation. When the relationship between students and teachers is not harmonious, negative emotions on the teacher's side come into play. These are natural emotional reactions explicable by the theory of Lazarus (1991a). A major cause of anger is the teacher's fear of losing control and authority over the students (Ayme et al., 2009). This often leads to the teacher developing a predefined conviction that the students are always behaving in the wrong way, causing them to start the lesson with negative emotions such as the fear of losing authority. Another aspect to be mentioned is the perception of and reaction to disruptions. As the theory suggests, not every teacher perceives the same disruption in the same way. Therefore, one must consider how and when to react, because ineffective dealing with disruptions may cause bigger or more intense disruptions. The reaction to these disruptions can cause restlessness in other students and thus create a spiral of disruptions which may destroy the teaching flow.

*Conceptual modelling of the relationships between emotions and disruptive behaviour in physical education.* Based on the results and discussion above, a conceptual model of relationships between teachers' and students' emotions regarding the identified typical disruptive behaviour in physical education was developed (figure 2). It reflects the fragile balance of the emotional relationship between teachers and students, based on the transactional model (Nickel, 1976). The model has been enriched by adding the various emotions, that the results have reported as occurring during physical education and placing them in the middle to illustrate their influence at each step of the model. The model includes both of the sides that impact classroom disruptions: the teacher and the students. Both parties have a perception of the behaviour of the other side, which is influenced by expectations, attitudes and previous experiences. Emotions act as filters which influence all interpersonal processes between teacher and students. Negative emotions on one of the sides can lead to a deterioration of the relationship between teacher and students due to emotional contagion (Barsade, 2002; Prochazkova & Kret, 2017). This may create a negative cycle that is likely to result in disruption in the classroom. The model allows a compact view of what may lead to disruptions and it provides potential points in the emotional circle where the teachers or students may intervene to modify the outcome.

Two characteristics of this review suggest these findings are not just specific to the reported studies and settings but have a more generalisable value. The first is the heterogeneity of the sample which includes different age groups and countries. The second is that the studies have involved a multidimensional perspective employing both quantitative and qualitative lenses. Nonetheless considering that the teacher-student relationship plays such an important role in the development of classroom disruptions and that most of these findings were obtained via subjective methods, it would be useful to assemble more observational data to continue to develop the theoretical basis for this area. Future studies could also focus on disruptions that are not directly related to this relationship such as the outbreak of joy or disruption because of revenge in an unfair game. Additionally, positive emotions were not researched very frequently in the included studies and future research may also focus on positive emotions and classroom atmosphere.

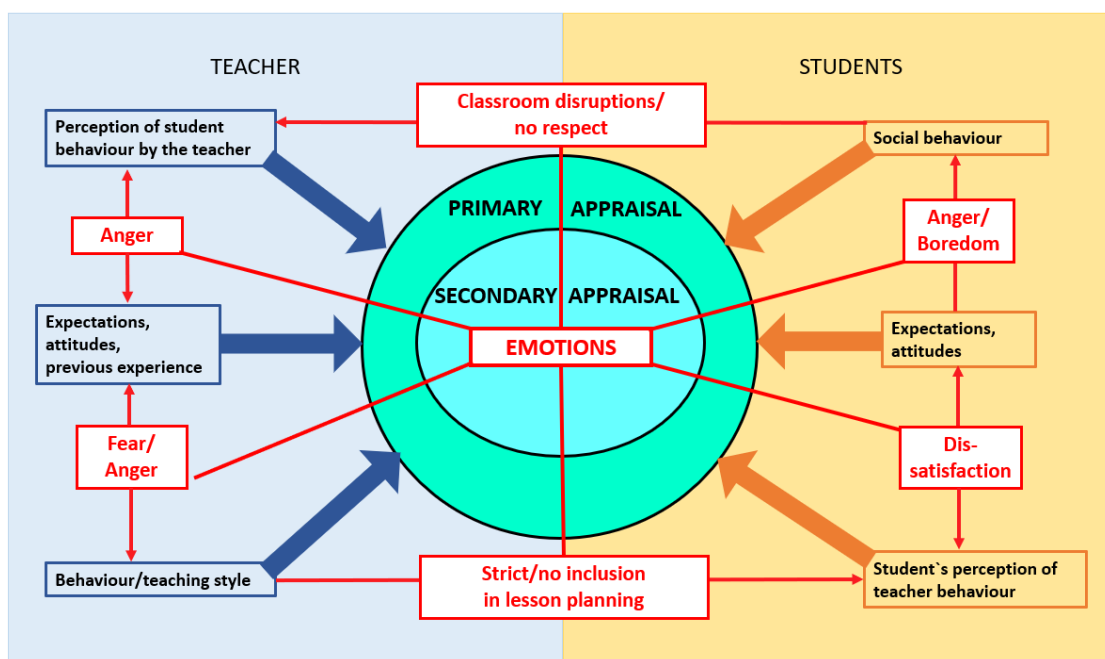


Figure 2. Conceptual model of the relationships between teachers' and students' emotions and disruptive behaviour in physical education.

## Conclusion

This review has described the relationships between emotions and classroom disruptions in physical education. Emotions in physical education, understood in accordance with Lazarus's theory and extended by the model of emotional contagion, are identified as being a component of classroom disruptions. Anger is an especially well investigated emotion in this context, but constructs such as fear, boredom or low intrinsic motivation to participate in class also were described as connected to disruptions and may be addressed by attention to the underlying cognitions. Emotions can feature in classroom disruptions in different ways. A focus point in the reviewed studies was the student-teacher relationship which is influenced by various emotions. An important finding is that the explanations for classroom disruptions are not to be found on the side of teachers or students alone. Reasons and causes for classroom disruptions can be projected on the

other side giving rise to emotional contagion. An initial model of the relationships between teachers' and students' emotions in classroom disruptions in physical education has been derived. Despite these results, it should be stated that this is a field of research that is not yet sufficiently explored, and more research needs to be done to further strengthen this research base perhaps to embrace other concepts such as bullying.

### **Disclosure and conflict of interests**

The authors declare that there is no conflict of interest and that no funding was received.

### **References**

- Álvarez Martino., E., Álvarez Hernández, M., Castro Pañeda, P., Campo Mon, M. A., & González González de Mesa, C. (2016). Teachers' perception of disruptive behaviour in the classrooms. *Psicothema*, 28(2), 174–180. <https://doi.org/10.7334/psicothema.2015.215>
- Ayme, S., Ferrand, C., Reynes, E., & Borteyrou, X. (2009). Personality traits and students' misbehavior: Effects on French physical education teachers' anger response. *Perceptual and Motor Skills*, 108(1), 15–29. <https://doi.org/10.2466/PMS.108.1.15-29>
- Barsade, S. G. (2002). The Ripple Effect: Emotional Contagion and Its Influence on Group Behavior. *Administrative Science Quarterly*, 47(4), 644. <https://doi.org/10.2307/3094912>
- Bekiari, A., Kokaridas, D., & Sakellariou, K. (2006). Associations of students' self-reports of their teachers' verbal aggression, intrinsic motivation, and perceptions of reasons for discipline in Greek physical education classes. *Psychological Reports*, 98(2), 451–461. <https://doi.org/10.2466/PR0.98.2.451-461>
- Cooper, P. (2011). Teacher strategies for effective intervention with students presenting social, emotional and behavioural difficulties: an international review. *European Journal of Special Needs Education*, 26(1), 71–86. <https://doi.org/10.1080/08856257.2011.543547>
- Cothran, D. J., & Ennis, C. D. (1997). Students and teachers' perceptions of conflict and power. *Teaching and Teacher Education*, 13, 541–553.
- Cothran, D. J., & Kulinna, P. H. (2007). Students' reports of misbehavior in physical education. *Research Quarterly for Exercise and Sport*, 78(3), 216–224. <https://doi.org/10.1080/02701367.2007.10599419>
- Cothran, D. J., Kulinna, P. H., & Garrahy, D. A. (2003). “This is kind of giving a secret away...”: students' perspectives on effective class management. *Teaching and Teacher Education*, 19(4), 435–444. [https://doi.org/10.1016/S0742-051X\(03\)00027-1](https://doi.org/10.1016/S0742-051X(03)00027-1)
- Curran, T., & Standage, M. (2017). Psychological needs and the quality of student engagement in physical education: teachers as key facilitators. *Journal of Teaching in Physical Education*, 36(3), 262–276. <https://doi.org/10.1123/jtpe.2017-0065>
- Ekman, P. (1993). Facial expression and emotion. *American Psychologist*, 48(4), 384–392. <https://doi.org/10.1037/0003-066X.48.4.384>
- Ekman, P. (Ed.). (1994). *Series in affective science. The nature of emotion: Fundamental questions*. Oxford Univ. Press. <http://www.loc.gov/catdir/enhancements/fy0603/94018638-d.html>
- Feldman-Barrett, L. (1998). Discrete emotions or dimensions? The role of valence focus and arousal focus. *Cognition & Emotion*, 12(4), 579–599. <https://doi.org/10.1080/026999398379574>
- Fernández-Balboa, J.-M. (1991). Beliefs, interactive thoughts, and actions of physical education student teachers regarding pupil misbehaviors. *Journal of Teaching in Physical Education*, 11, 59–78.

- Furley, P., & Laborde, S. (2019). Emotionen im sport [Emotions in sports]. In J. Schüler, M. Wegner, & H. Plessner (eds), *Sportpsychologie [Sportpsychology]* (pp. 235–265). Berlin: Springer [https://doi.org/10.1007/978-3-662-56802-6\\_11](https://doi.org/10.1007/978-3-662-56802-6_11)
- Garside, R. (2014). Should we appraise the quality of qualitative research reports for systematic reviews, and if so, how? *Innovation: The European Journal of Social Science Research*, 27(1), 67–79. <https://doi.org/10.1080/13511610.2013.777270>
- Granero-Gallegos, A., Ruiz-Montero, P. J., Baena-Extremera, A., & Martínez-Molina, M. (2019). Effects of motivation, basic psychological needs, and teaching competence on disruptive behaviours in secondary school physical education students. *International Journal of Environmental Research and Public Health*, 16(23). <https://doi.org/10.3390/ijerph16234828>
- Hattie, J. (2009). *Visible Learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement*. London: Routledge.
- Heckaman, K., Conroy, M., Fox, J., & Chait, A. (2000). Functional assessment-based intervention research on students with or at risk for emotional and behavioral disorders in school settings. *Behavioral Disorders*, 25(3), 196–210.
- Hein, V., Koka, A., & Hagger, M. S. (2015). Relationships between perceived teachers' controlling behaviour, psychological need thwarting, anger and bullying behaviour in high-school students. *Journal of Adolescence*, 42, 103–114. <https://doi.org/10.1016/j.adolescence.2015.04.003>
- Krekar, I. M., Kolega, M., & Krampus, V. (2019). Students' and professors' perception of occurrence and disturbance of disruptive classroom behaviors. In Z. Bekirogullari, M. Y. Minas, & R. X. Thambusamy (Eds.), *ICEEPSY 2016: Education and Educational Psychology, vol 16. European Proceedings of Social and Behavioural Sciences* (pp. 189–202). Future Academy. <https://doi.org/10.15405/epsbs.2016.11.20>
- Kulinna, P. H., Cothran, D. J., & Regualos, R. (2006). Teachers' reports of student misbehavior in physical education. *Research Quarterly for Exercise and Sport*, 77(1), 32–40. <https://doi.org/10.1080/02701367.2006.10599329>
- Lazarus, R. S. (1991a). *Emotion and Adaptation*. Oxford University Press.
- Lazarus, R. S. (1991b). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46, 819–834.
- LeDoux, J. E. (1998). *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*. New York: Simon & Schuster.
- Lee, Y. H. (2019). Emotional labor, teacher burnout, and turnover intention in high-school physical education teaching. *European Physical Education Review*, 25(1), 236–253. <https://doi.org/10.1177/1356336X17719559>
- Lu, C., & Buchanan, A. (2014). Developing students' emotional well-being in physical education. *Journal of Physical Education, Recreation & Dance*, 85(4), 28–33. <https://doi.org/10.1080/07303084.2014.884433>
- Moen, K. M., Westlie, K., & Skille, E. A. (2018). The Changing Room in Physical Education as Cross Roads Between Fields and Curricula: The Experiences of Norwegian Students. *SAGE Open*, 8(4), 215824401881892. <https://doi.org/10.1177/2158244018818926>
- Musser, E. H., Bray, M. A., Kehle, T. J., & Jenson, W. R. (2001). Reducing disruptive behaviors in students with serious emotional disturbance. *School Psychology Review*, 30(2), 294–304.
- Furley, P., & Laborde, S. (2019). Emotionen im Sport [Emotions in sports]. In J. Schüler, M. Wegner, & H. Plessner (eds), *Sportpsychologie [Sportpsychology]* (pp. 235–265). Berlin: Springer [https://doi.org/10.1007/978-3-662-56802-6\\_11](https://doi.org/10.1007/978-3-662-56802-6_11)
- Garside, R. (2014). Should we appraise the quality of qualitative research reports for systematic reviews, and if so, how? *Innovation: The European Journal of Social Science Research*, 27(1), 67–79. <https://doi.org/10.1080/13511610.2013.777270>
- Granero-Gallegos, A., Ruiz-Montero, P. J., Baena-Extremera, A., & Martínez-Molina, M. (2019). Effects of Motivation, Basic Psychological Needs, and Teaching Competence on Disruptive Behaviours in Secondary School Physical Education Students. *International*

- Journal of Environmental Research and Public Health*, 16(23). <https://doi.org/10.3390/ijerph16234828>
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.
- Heckaman, K., Conroy, M., Fox, J., & Chait, A. (2000). Functional Assessment-Based Intervention Research on Students with or at Risk for Emotional and Behavioral Disorders in School Settings. *Behavioral Disorders*, 25(3), 196–210.
- Hein, V., Koka, A., & Hagger, M. S. (2015). Relationships between perceived teachers' controlling behaviour, psychological need thwarting, anger and bullying behaviour in high-school students. *Journal of Adolescence*, 42, 103–114. <https://doi.org/10.1016/j.adolescence.2015.04.003>
- Krecar, I. M., Kolega, M., & Krampus, V. (2019). Students' and Professors' Perception of Occurrence and Disturbance of Disruptive Classroom Behaviors. In Z. Bekirogullari, M. Y. Minas, & R. X. Thambusamy (Eds.), *ICEEPSY 2016: Education and Educational Psychology*, vol 16. European Proceedings of Social and Behavioural Sciences (pp. 189-202). Future Academy. <https://doi.org/10.15405/epsbs.2016.11.20>
- Kulinna, P. H., Cothran, D. J., & Regualos, R. (2006). Teachers' reports of student misbehavior in physical education. *Research Quarterly for Exercise and Sport*, 77(1), 32–40. <https://doi.org/10.1080/02701367.2006.10599329>
- Lazarus, R. S. (1991a). *Emotion and adaptation*. Oxford University Press.
- Lazarus, R. S. (1991b). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46, 819–834.
- LeDoux, J. E. (1998). *The emotional brain: The mysterious underpinnings of emotional life*. New York: Simon & Schuster.
- Lee, Y. H. (2019). Emotional labor, teacher burnout, and turnover intention in high-school physical education teaching. *European Physical Education Review*, 25(1), 236–253. <https://doi.org/10.1177/1356336X17719559>
- Lu, C., & Buchanan, A. (2014). Developing Students' Emotional Well-being in Physical Education. *Journal of Physical Education, Recreation & Dance*, 85(4), 28–33. <https://doi.org/10.1080/07303084.2014.884433>
- Moen, K. M., Westlie, K., & Skille, E. A. (2018). The Changing Room in Physical Education as Cross Roads Between Fields and Curricula: The Experiences of Norwegian Students. *SAGE Open*, 8(4), 215824401881892. <https://doi.org/10.1177/2158244018818926>
- Musser, E. H., Bray, M. A., Kehle, T. J., & Jenson, W. R. (2001). Reducing Disruptive Behaviors in Students with Serious Emotional Disturbance. *School Psychology Review*, 30(2), 294–304.

## Appendix

### Summary and results of the studies

Author (year); title; country	Participants	Variables investigated	Main results
<p>Ayme, Ferrand, Reynes &amp; Borteyrou (2009); Personality traits and students' misbehavior: Effects on French physical education teachers' anger response; France</p>	<p>n = 68 (35 male, 33 female); teachers: 1-35 years of experience; mean age: 38,2 years</p>	<p>The connection between the character trait "anger" and dealing with teaching disabilities as well as the connection between the emotion "fear" and teaching disabilities was investigated.</p>	<p>State anger: 493 cases; High intensity: 92 cases (score &gt; 17); Lower intensity: 401 cases (≤ 17)</p> <p>Categories that generated anger (students): start of lesson; tasks; behaviour towards teacher; behaviour towards group; material.</p> <p>Categories that lead to anger (teacher): uselessness; policeman instead of teacher; loss of authority; fear of teaching disruptions.</p> <p>Psychosomatic effects are associated with "state anger", such as headaches.</p>
<p>Bekiari, Kokaridas &amp; Sakellariou (2006); Associations of students' self-reports of their teachers' verbal aggression, intrinsic motivation, and perceptions of reasons for discipline in Greek physical education classes; Greece</p>	<p>n = 265 Greek youths (male: 131, female: 134) from 10 secondary schools in central Greece. All students had the same socio-economic background (middle school), mean age: 14,5 (SD 0,5)</p>	<p>Connection between verbal aggressiveness of teachers and perceived intrinsic motivation and the perceived discipline in physical education.</p>	<p>Significant positive correlations for verbal aggressiveness of teachers with: pressure/tension (r=.51); external reasons (r = .71); introjected reasons (r = .38); self-responsibility reasons (r = .50)</p> <p>Significant negative correlations between teacher verbal aggression and: classroom satisfaction (r = -.96); pleasure/interest (r = -.89); competence (r = -.49); effort/import (r = -.50); intrinsic reasons (r = -.56); diligence (r = -.52).</p>
<p>Cothran &amp; Ennis (1997); Students' and teachers' perceptions of conflict and power; USA</p>	<p>4 physical education teachers. 51 high school students from their classes (male: 27, female: 24); 89% African American, socio-economic lower - middle class.</p>	<p>This study examined four urban high school teachers' and their students' perceptions of power. Teachers and students attempted to resolve the</p>	<p>Teachers: pedagogical focus; class order more important than educational goals; a lot of decisions were based on the interests of students; teaching is easier at the beginning of the career; students are more difficult to teach, because they do not longer submit unconditionally; lack of support from the executive</p>

		<p>perceived conflict of interest over preferred class focus by using the power resources available to them.</p>	<p>floor; strategies: strategic retreat, exchange system.</p> <p>Students: social focus; feeling of little power and influence in the classroom; teachers need and appreciate their observance; reproaching or rewarding their teachers through their behaviour; strategies: non-participation, personality power, interruption and reward of the teachers.</p> <p>Both: knowledge about different behavioural preference</p> <p>Observation: pace and work are controlled by the students</p>
<p>Cothran &amp; Kulinna (2007); Student's reports of misbehavior in physical education; USA</p>	<p>n = 2.309 middle- and high school students from 18 schools, urban: 1495, rural: 389, suburban: 425; different ethnic backgrounds; male: 1145, female 1131, diverse 33;</p>	<p>The perception regarding misconduct of students from the students' perspective in physical education</p>	<p>Significant results: types of misconduct linked to gender, middle and high school level, race; interactions in both directions; differences in severity profiles and interaction with self-rated ability; environmental differences of who is causing more trouble and why; relationship regarding the evaluation of one's own behaviour and why students in general behave incorrectly.</p> <p>Gender: girls reported more often; boys gave other reasons</p> <p>Reasons: emotions; lesson is boring; demand for attention; no trying because of less self-confidence, don't like the teacher, they are all just bad students</p>
<p>Cothran, Kulinna &amp; Garrahy (2003); This is kind of giving a secret away...: students' perspectives on effective class management; USA</p>	<p>n = 182 sports students; grades 6-12; male: 100, female: 82; 14 different schools; different school backgrounds regarding environment etc.; different origins and socio-economic backgrounds</p>	<p>Investigation of effective and ineffective class managers from a student perspective</p>	<p>Students' perspective of what is necessary to be a good teacher; clear expectations; clear consequences; implementing the consequences; prepared for tests from the students, not too strict; humour; control and fun balanced; positive relationship with students, teacher must earn the respect; treat students equally, being interested in the students.</p>



			<p>Teacher behaviour is reflected in student behaviour</p> <p>Two theories about why some teachers are not good classroom managers:</p> <ul style="list-style-type: none"> <li>• Fear that students might not like teachers.</li> <li>• Teachers do not have the knowledge or the confidence.</li> </ul>
<p>Fernández-Balboa (1991); Beliefs, Interactive Thoughts, and Actions of Physical Education Student Teachers Regarding Pupil Misbehaviors; USA</p>	<p>n = 15 student teachers (sport); male: 8, female: 7; 14 white Americans, 1 black from Curcao with English as second language; 21 to 26 years; Different school settings</p>	<p>Convictions and interactive thoughts of pre-service physical education teachers about student misbehaviour and how these attitudes influence their actions</p>	<p>Thoughts of student teachers about misbehaviour: large continuum of how to deal best; own school experiences were relevant for own convictions, teachers can't do anything to prevent misconduct; students are to blame for it; disinterest and boredom and attitude to P.E. are the main causes; teachers are feeling angry, frustrated etc. that affects own actions; negative cycle they don't know how to escape it; their own management actions are ineffective, which leads to negative emotions (anger, frustration, insecurity etc.).</p>
<p>Granero-Gallegos, Ruiz-Montero, Baena-Extremera &amp; Martínez-Molina (2019); Effects of motivation, basic psychological needs, and teaching competence on disruptive behaviours in secondary school physical education students; Spain</p>	<p>n = 758 young students from 7 secondary schools; 45.8% male, 54.2% female; 13-18 years old</p>	<p>Assessment of the effects of teaching competence, motivation and basic psychological needs on disruptive behaviour</p>	<p>The present study shows that various disruptive behaviours are more likely to occur in men. The probability of behavioural problems among students is lower when the teacher is more competent. Concerning motivation, it was found that students with more self-determined motivation are less likely to exhibit low engagement and irresponsibility, while motivation increases the various disruptive behaviours in the classroom. On the other hand, disciplinary problems are more likely to occur among the most autonomous students.</p>
<p>Hein, Koka &amp; Hagger (2015); Relationships between perceived</p>	<p>n = 548 students from 10 schools; male: 309, female: 239; 12-16 years old</p>	<p>Effects of students' perceptions on the control behaviour of</p>	<p>There were no unique significant effects on the control of the use of praise and rewards and excessive control behaviour when needed. Focusing on the effects of</p>

<p>teachers' controlling behaviour, psychological need thwarting, anger and bullying behaviour in high-school students; Estonia</p>		<p>their teachers (e.g., controlling the use of praise and extrinsic rewards, negative conditional attention, intimidation and excessive control behaviour) on their feelings of anger and bullying by conveying perceived psychological need</p>	<p>psychological needs that thwart the results, there was a statistically significant direct path from perceived need to anger, but no statistically significant direct path from perceived need to bullying. However, anger was strongly associated with bullying and therefore had a significant indirect influence of the perceived need to prevent bullying through anger.</p> <p>A study of indirect effects showed that the perceived negative conditional consideration and intimidation is statistically significantly related to the anger and bullying of students.</p>
<p>Kulinna, Cothran &amp; Regualos (2006); Teachers' Reports of Student Misbehavior in Physical Education; USA</p>	<p>n = 303 PE teachers (male: 130, female: 173) in 149 elementary schools and 116 secondary schools. 38 are teaching in multiple schools</p>	<p>Potentially negative student behaviour from the teacher's perspective</p>	<p>Negative student behaviour: 59 identified student misbehaviours occurred; light behaviour was reported most frequently; female teachers – more lighter behaviours; male teachers – more moderate and severe behaviours; experienced teachers – higher level of severe behaviour; significant interaction between teaching level and gender; problematic behaviour most common at secondary school level.</p>
<p>Papaioannou (1998); Goal Perspectives, Reasons for Being Disciplined, and Self-Reported Discipline in Physical Education Lessons; Greece</p>	<p>n = 674 Greek students (male: 319, female: 355) from different Greek suburbs. mean age: 10 (SD 0,5) n= 182, 12 (SD 0,5) n = 249, 15 (SD 0,5) n = 243</p>	<p>The perceived motivational climate, goal orientation, reasons for discipline, and strategies to maintain discipline were examined.</p>	<p>There are positive relationships between intrinsic motivation and discipline in physical education. Furthermore, there are positive correlations (<math>r = .55</math>) between discipline in class and the teacher's teaching strategies (external reasons for discipline).</p>
<p>Simonton &amp; Garn (2020); Negative emotions as predictors of behavioral outcomes in middle school physical education; USA</p>	<p>n = 401 middle school students (mean age: 11.98, SD: .884) from mandatory PE courses from 2 middle schools in the Southeast USA. 52% female. Mixed grades in physical education (6th = 35%, 7th = 37%, 8th = 28%)</p>	<p>The connection between the negative emotions "anger", "boredom" and "shame" and the "self-reported disruptive</p>	<p>Shame: predicted all three behavioural outcomes; negative predictor of students' future leisure MVPQ and future disruptive behaviour; positive predictor of future exercise behaviour</p>

	<p>Mixed ethnicities:  Black/African American (34%), White/Caucasian (33%), Asian/Asian-American (14%), multi-racial (8%), Hispanic/Latino/Mexican American (7%), 4% reported "Other"</p>	<p>behaviour" leisure time MVPA and sedentary behaviour time was investigated!</p>	<p>Anger:  positive predictor of future disruptive behaviour; negative predictor of future lack of exercise behaviour; not related to MVPA; correlation between disruptive behaviour and anger; correlation between anger and sedentary activity towards P.E.</p> <p>Boredom:  negative predictor of future leisure MVPA; not a predictor of future disruptive and sedentary behaviour; Disruptive and sedentary behaviour were positive predictors of future boredom</p>
<p>Supaporn (2000); High school students' perspectives about misbehaviour; Thailand</p>	<p>39 voluntary high school students, 26 from Starlight high school, 13 from Moonlight high school. Between 15 and 17 years old.  6 PE teachers with 5-25 years of experience. Class size between 20-33 students</p>	<p>The aim is to understand students' understanding of classroom disruptions.</p>	<p>Misconduct: doing something the teacher has forbidden, not doing something the teacher has told them to do; harassment, not paying attention, not complying, cheating, fighting, smoking.</p> <p>Subject emotions: only if the activity was fun (enjoyment), did they participate and not interrupt. Other factors were peer groups, type of activity</p> <p>Clear rules, structure and small groups prevent misconduct, and authority prevents misconduct.</p>