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Elementary Teachers' Experiences with Trauma-Informed Practice

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Abstract

This qualitative study used in-depth interviews to understand teacher experiences implementing trauma informed practice (TIP) at an elementary school in the Midwestern U.S. School leaders had implemented a large-scale TIP effort a few years prior to the study. The study found that the interviewees supported and implemented TIP and perceived that most other teachers in the school did too. Interviewees also believed that although it was diminishing, resistance to TIP still existed among staff. Study findings indicate that social interaction among staff around TIP was important for its spread. Finally, because many of the instructional practices that make up TIP are not new, but rather practices already known in the field to be effective, our findings shed light on how repackaging and reframing instructional practices may help in instructional reform.

Keywords:

Trauma-informed Practice, Teachers, Elementary School, Diffusion of Innovation Theory

Introduction

The principal of Mills Elementary School needed a more effective way to reduce chronic misbehavior. Teachers were sending students to the Assistant Principal (AP) when they misbehaved. The AP, trained in behavior disorders, would talk to the students about the problem, sometimes give them a mild consequence, and send them back to the classroom. Not only did this approach fail to reduce the number of times some students were sent to the AP, a vocal group of teachers was calling for the students to be punished. They felt that the students continued to misbehave because they were not receiving negative consequences for their misbehavior. The principal did not believe harsher punishment was the answer, but she needed to find a solution. Her subsequent search led her to trauma-informed practice.

Behavior problems in school are a common consequence of trauma, and research shows that 1 in 4 children in the US has experienced trauma, with higher rates for children of color (McConnico et al, 2016). Trauma impacts brain development, leading to cognitive difficulties as well as difficulties with self-regulation and relationships (Brunzell et al., 2018; Keown et al, 2020). Students who have experienced trauma often have difficulty with learning and behavior in school, and are at risk of lower achievement and dropout (McConnico et al., 2016; Crosby, 2015; Yohannan & Carlson, 2019). Traditional approaches to student discipline can re-



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traumatize a child and are ineffective (McConnico et al, 2016).

In recent years, many schools and districts across the U.S. have implemented trauma-informed practices (TIP) to meet the needs of children who have experienced trauma. Such practices focus on understanding effects of trauma on people and their behavior and providing stability and safety along with the self-regulatory and relationship skills that help students heal and thrive socially and academically (Brunzell et al, 2018; Carello & Butler, 2015). Implementation of TIP in schools can reduce behavior problems, increase achievement, and keep students in school, especially for children who are already harmed due to racial and socio-economic oppression (Crosby, 2015). It also increases teacher satisfaction and reduces teacher stress. However, implementation of TIP at the school and teacher level is complex and challenging (Alisic, 2012; Blitz et al, 2016).

This study used interviews to examine teacher and other staff members' experiences with and perceptions about implementing trauma informed practice (TIP) at Mills' Elementary School, a large P-5 school in the Midwestern US. Interviewees supported TIP and reported that though some members of the teaching staff remained resistant to it, trauma-informed approaches had been fairly widely adopted at the school. The data also indicate that social interaction among staff around TIP was important for its spread. Finally, because many of the instructional practices that make up TIP are not new, but rather practices already known in the field to be effective, our findings shed light on how repackaging and reframing instructional practices can help in instructional reform.

Trauma and Trauma-informed Practice

Trauma is an event or series of events that cause enduring emotional or physical harm. Trauma can lead to chronic stress, which is long-term activation of the body's stress response. When that happens, it affects brain development and is linked to a variety of difficulties with memory, language, attention, impulse control, and learning (McConnico et al, 2016; Perry & Daniels, 2016; Thomas et al, 2019). Trauma can also lead to aggression, difficulty with trust, and difficulty in social relationships (McConnico et al, 2016; Schnyder et al, 2021). Children who have experienced trauma tend to have more behavior problems, lower achievement, lower GPA, and higher risk of dropout (Crosby, 2015; Yohannan & Carlson, 2019). Such children are more likely to be labeled unruly or unmotivated in school and experience chronic absenteeism; they often get misdiagnosed as having oppositional defiant disorder, ADHD, and learning disabilities (Gubi et al, 2019; Perry & Daniels, 2016).

Trauma informed means understanding effects of trauma on people and their behavior and knowing how to provide services that take trauma into account and help people heal (Carello & Butler, 2015). The goal of TIP is to enable trauma-impacted children to have access to the school curriculum (McConnico et al., 2015). This requires increasing teacher understanding of the trauma children face and its effects on student behavior, development, and school performance; providing teachers with strategies and interventions for dealing with behavior difficulties; making students feel safe, empowered, and trusting (Carello & Butler, 2015; McConnico et al., 2015; Schnyder et al., 2021). TIP includes a range of activities and skills, such as teachers being attuned to children's states and knowing when they need a break, providing such breaks, building good relationships with and showing positive regard for all children, helping children to control their actions and emotions when they act out rather than punishing them, developing self-regulation skills, helping students develop relationships with other children, and providing a calm environment with a predictable structure (Crosby, 2015; Thomas et al, 2019; Von der Embse et al., 2019). In addition to changes in classroom management practices, specific trauma-sensitive practices include mindfulness, which develops self-regulation skills; social-emotional learning, which helps with relationship development; calm rooms and/or calm spaces; and many others. Several trauma-informed models exist for schools to choose from, with overlap among the strategies and practices (Thomas et al., 2019). Successful programs tend to include: cross-service collaboration (whereby mental health services outside of the school collaborate with the school); buy-in from staff; professional development; changes in teaching practice and in behavior management practice; policy changes; and change in institutional climate (Crosby, 2015; Thomas et al., 2019).

Implementation of trauma-informed practice can be challenging for practitioners as it often requires a change in mindset and development of new skills. First, teachers need to hold all students in unconditional positive regard (Thomas et al., 2019). They also need to prioritize social-emotional needs of students over academics, understanding that students cannot learn academics unless their socio-emotional needs are met (Alisic, 2012). Third, handling instances of student misbehavior requires a move away from punitive approaches. Faced with sometimes hostile and menacing behaviors of trauma-impacted children, teachers must replace the question "What is wrong with you?" with "What is happening with you?" and seek to empower rather than disempower the student (Thomas et al., 2019). Doing so requires that teachers view the situation from an objective stance and that they carefully regulate and monitor their own responses (Craig, 2016).

Theoretical Framework

We grounded this study in the belief that the current predominant approach to discipline in schools of punishing minor infractions and using segregation and separation (e.g., detention, alternative schools) for more serious infractions is antithetical to the attainment of the educative goals of schooling (Warnick & Scribner, 2020). Punishment and separation do not serve developmental or educative purposes because they do not lead to student reflection or understanding of their actions, to taking responsibility for one's actions, to empathy, or to increased self-regulation skills. Instead, they are damaging for students' education and growth in several ways. First, the threat of punishment increases the stress response of dysregulated children, making it even harder for them to meet school expectations (Ablon & Pollastri, 2018). Second, punishment and separation take away opportunities for academic and socio-emotional learning - the links between punitive and exclusionary discipline and student dropout, low achievement, incarceration, lower economic outcomes and other negative consequences are well-documented (Dutil, 2020; Jean-Pierre & Parris, 2018; Lamboy & Thompson, 2020). Finally, the system exacerbates existing inequalities, as punishment and segregation are unequally and unfairly applied. The damage occurs disproportionately to students who are the least advantaged to begin with, leading still further to a lack of legitimacy and trust in schools by families and communities (Warnick & Scribner, 2020).

We also believe that the majority of student behavior problems, especially the chronic ones, are not a motivational issue but rather due to neurocognitive skills deficits (Ablon & Pollastri, 2018, p. 4), often caused by trauma (Van der Kolk, 2014). For example, many children who have been abused see danger in the most benign of situations, such that the world is full of triggers. Their experiences have led to changes in their self-regulation, thinking, and emotions (Van der Kolk, 2014). Thus their actions make sense for their experience and their brains; they cannot act otherwise. Punishing students for behaviors beyond their control is unjust and ineffective, as well as damaging (Lamboy & Thompson, 2020). Punishing trauma-impacted students is often retraumatizing (McConnico et al., 2016).

To understand factors influencing teacher decisions about whether to adopt TIP we also use Diffusion of Innovation Theory, which explains how and why a new practice spreads through a social system (Rogers, 2003). Attributes of an innovation, in interaction with social factors, influence diffusion. Among the most commonly studied attributes are relative advantage and compatibility. Relative advantage refers to how much better the innovation is perceived to be than the

practice(s) it is replacing (Rogers, 2003). Compatibility is the extent to which the innovation is consistent with one's values, pre-existing beliefs, and perceived needs. Importantly, although effectiveness and compatibility matter, social issues are more important influences on adoption, with what other people say and do holding a tremendous influence (Rogers, 2003).

A Note on Terminology

In this article the terms trauma-informed practice (TIP) and trauma-sensitive practice are used interchangeably to refer to school practices that fit the definition of trauma informed. We use the term trauma-informed even though at the time of data collection Mills School leaders often used different terminology (such as "building resilience in students") when communicating with staff, and even though not all study participants used the term for practices that nevertheless fit the definition of TIP.

Methods

This qualitative interview study sought to understand teacher and other staff members' experiences implementing trauma informed practice (TIP) at Mills Elementary School. The question we addressed was: How do faculty, staff, and administrators at the school experience the use of trauma-informed practice?

Context and Setting

The setting for this study was Mills Elementary School which serves approximately 700 students in grades Pre-K through 5th. It is one of four elementary schools in a large district in the US Midwest. The student body is over 90% white and the staff of about 45 teachers plus 35 support staff members is almost 100% white. Socio-economic diversity is greater than racial diversity, with approximately 25 percent of students categorized as low-income.

In 2018 the school implemented a targeted TIP program called Advance. A trauma-informed team of 12 teachers and 1 interventionist was created. The team participated in training and implemented a set of trauma-informed strategies in their classrooms. The team identified 31 trauma-impacted students to participate for the 2018-2019 school year. These students were placed in team members' classrooms. The main components of the program were use of trauma-sensitive language, use of comfort corners, understanding each student's triggers, daily check-in and check-out, daily classroom meetings, flexible seating, and restorative practice discipline. Each student participant was also assigned an adult mentor in the school and a specific leadership position. The program also involved collaboration with outside agencies to help students and their families as appropriate.

During Summer 2018, in preparation for the launch of Advance, the Advance team members participated in TIP training provided by the district and other sources. In October, the principal also started a book study focused on TIP, open to all instructional staff. The 13 members of the Advance team plus 12 other teachers participated. The book study involved monthly collaborative meetings to discuss the book and TIP strategies and approaches in general. In November the school set up opportunities for teachers who were not on the Advance team to observe teachers on the team using TIP in their classrooms.

Advance continued in the first part of the 2019-2020 school year in a similar manner, including a new book study. However, at the onset of the COVID-19 pandemic in spring 2020 Advance was put on hold as lockdown, virtual schooling, and in-person schooling under COVID conditions made it too challenging to continue the program. At the beginning of the 2021-2022 school year, TIP resumed but in a much less resource intensive manner. Specifically, at the time of the study the principal was using a more subtle and much less resource-intensive approach of trying to infuse what she called a “culture and philosophy” of trauma-informed practice throughout the school. She indicated in an interview that without explicitly requiring all teachers to use TIP, she focused on teachers “building the relationships and rapport with the kids, making sure that they feel safe and comfortable” and socially and emotionally healthy “knowing that you need to have that in place if you want those academic gains.” Her strategy involved encouraging and providing resources for (but not requiring) a set of practices to be implemented in all classrooms for all students. These practices included using a specific social-emotional learning program, development of good relationships with children via morning meetings, use of a calm area, restorative approaches to behavior problems, and prioritizing social-emotional needs of students. Importantly, the principal did not use the term “trauma” when describing this approach to staff, as she felt that some in the school community perceived that term to be too negative. Instead, she described the strategies as a way to “build resilience” in students.

Participants

For the initial step in recruitment, the first author contacted the school principal and asked her whether she would be interested in the study taking place at Mills Elementary. The principal was excited about the offer and also agreed to be interviewed as part of the study. To recruit the rest of the interviewees, the principal sent out an email to staff providing a brief description of the study and asking for interview volunteers. Interview participants received a \$40 gift card after the interview.

The 17 interview participants comprised 2 administrators, 14 certified teachers and 1 aide. All were white and all but one was female. The certified teachers represented all grade levels in the school and included 10 general education teachers, 3 special education teachers, and 1 specialist teacher. The non-administrator staff participants had between 1 and 31 years of experience in education, with a mean of 13 years. They had worked at the school between a few months and 13 years, with a mean of 5 years. Ten of the certified teachers had master’s degrees and 4 had bachelor’s degrees. As will be seen in the Findings, the participants varied in knowledge of and experience with trauma-informed practice.

The administrators comprised the principal and assistant principal. The principal had a doctorate and 31 years of experience in the field; she had been principal of the school for 12 years. The assistant principal had a master’s degree and 19 years of experience in the field and had been at the school for 11 years.

Data Sources and Data Analysis

The first data source was 18 semi-structured interviews, which included 2 interviews with the principal and 1 interview with each of the rest of the participants. The interviews took place August through November 2021 and were between 34 and 71 minutes long, with an average of 53 minutes. Eight of the interviews took place via Zoom, and 10 were in person, most at the school. The first author conducted 10 of the interviews and the second author conducted eight. The interviews were recorded using audio-recording and speech-to-text software. The first author then listened to each recording and corrected the transcripts.

The second data source was observation of two virtual staff meetings at the school. The first author attended the meetings which took place after school in late August and early December 2021. They were each about an hour in length. The principal led the meetings which were attended by about 45 certified staff members. The researchers had university Institutional Review Board approval for the research.

We analyzed the data using thematic analysis to seek categories, patterns, and themes (Bogdan & Biklen, 2007; Esterberg, 2002; Glesne, 2011), with the aid of the qualitative data analysis software Dedoose. We began by reading and re-reading each interview and writing memos to document our initial thoughts. We then did open coding, applying category names to bits of text (Esterberg, 2002; Glesne, 2011). The long list of initial codes included such items as School Culture, Punishment, Effects of TIP, Definition of Trauma, Socio-emotional Needs, and Self-regulation. After open coding was complete, we reworked the codes in conjunction with our research questions, and then

refined and collapsed the codes to a smaller set of focused codes (Esterberg, 2002) that included categories such as Resistance to TIP, Relationships, and Impact of COVID. We then conducted focused coding with this substantially reduced set of codes, refining even further until we had a final set of themes.

Findings

Theme 1: Interviewees Support and Implement TIP and Perceive That Most of Their Colleagues Do Too

All of the interviewees expressed support for TIP and described using a wide range of practices consistent with it. For example, 9 participants mentioned using a calm space or calming activity for students when needed, 8 mentioned practicing mindfulness, and 7 used a specific social-emotional development program that was available at the school. In terms of TIP-consistent beliefs, most participants mentioned or discussed the need to prioritize relationships and socio-emotional health over academics both because socio-emotional health is extremely important in its own right and also because students cannot learn when social-emotional needs are not met. For example, Ms. Eberhardt said: "...[If] we need to take an extra 45 minutes for morning meeting because kids are really needing to talk, then we're gonna do that, and grammar is going to go for the day."

A salient finding in this theme is the importance the interviewees placed on finding out background information about trauma-impacted students and having compassion and empathy for them. Almost all interviewees described using approaches to misbehavior that are consistent with TIP. Key for interviewees was understanding why students behave inappropriately, using strategies aimed at de-escalating the situation, providing choices for students, and empowering them rather than punishing them. Ms. Davis talked about questioning students with empathy, to find out the root cause of misbehavior:

It's very easy to think "well they're just misbehaving", but I've got one little guy in here this year who he's a very difficult student to get through to. And he shows a lot of behaviors, but he finally opened up just last week, and you know kind of spilled his guts to me about what was going on at home. And then I was thinking, "Well, my gosh, what I'm dealing with here at school is nothing compared to what he's dealing with on a daily basis and no wonder why he can't focus and concentrate when he's constantly thinking about everything that goes on in the home life"...Nobody wants to act out, nobody wants to misbehave, there's a reason why it's happening.

The quote shows Ms. Davis emphasis on developing relationships with students, which several others spoke of as well. Ms. McDonald described dealing with student behavior problems in a way that provides students a "bridge" to solving problems on their own, essentially describing self-regulation training without using that term:

And it's like a stair step...You see them handling [a difficult situation] and be like, "hey, last time we talked, this is what we're gonna do so let's practice together", and then you're slowly releasing that responsibility back to them, so that eventually you're hoping that they identify when they start to lose it...that they can stop themselves and go "okay I need to count to five".

Several teachers described how their own mindset and teaching strategies had changed since learning about TIP. In terms of mindset, for example, Ms. Richards talked about shifting from a focus on moving through the material at a specific pace to thinking more about solving students' deeper socio-emotional problems:

[Prior to TIP training] I was always like, "Well, they have to be doing the same thing." "I'm gonna have to figure out a way to get them to do the homework" or whatever, and just realizing that everyone doesn't go home to the same house, that we can still get these kids to learn, but it's just not one size fits all.

Additional specific strategies that teachers described implementing in the initial years of TIP at Mills demonstrate teacher initiative in instituting a variety of different practices as part of their TIP approach. For example, one teacher used art therapy with trauma-impacted students in her classroom, while another implemented a cross-age peer tutoring program whereby trauma-impacted students tutored younger children in math or reading.

Several interviewees brought up the self-reinforcing characteristic of trauma-informed practice, which likely helps with the spread of TIP. Specifically, 9 participants described positive effects of TIP that they had experienced. Ms. Richards, for example, talked about how teachers "find success in [TIP] so quickly... It's a good feeling whenever your kids are engaged and you're able to talk to them about those things and then it just trickles down through their whole day." Ms. Davis said it had been "very hard" to switch from blaming the difficult students to asking oneself and the student "what's going on today?", but then went on to talk about the reward:

Eventually you do get through to them...The one student in particular this year came up and was like "you're the only teacher that's ever taken time to really care about me, and not just my behavior." So it's those things and I'm like, it's definitely 100% worth it.

Finally, in addition to supporting and using TIP themselves, the interviewees believed that most other teachers in the school use TIP. Estimates of current buy-in varied, but they were fairly high. Ten interviewees provided estimates, ranging from a low outlier of 60-70% to a high of 100%, cited by a few teachers. Two teachers mentioned that their entire grade level was on board. Teachers who had been at the school for more than a few years indicated that numbers had been increasing over time, mentioning factors such as training and book clubs as influential factors.

Theme 2: Participants Highly Value TIP-related Communication and Collaboration With Other Educators

Almost every participant discussed the importance and value for them of discussing trauma informed teaching strategies with others in the school. Teachers felt that they received helpful ideas from their peers in meetings and during one-on-one conversations. Six teachers mentioned the book studies that had occurred during Advance, which they found valuable and enjoyable. Several discussed communication with and support from the administrators related to specific trauma-impacted students. Ms. Faber said that she and her fellow teachers shared websites and books with each other, and she was one of three teachers who said they had liked the opportunity to observe in other teachers' classrooms during Advance.

One important form of communication came from school leaders. Specifically, several interviewees mentioned that the weekly emails from the principal, an important part of her new school philosophy strategy, were helpful reminders for teachers to take students' sometimes challenging home lives into consideration. Most of these interviewees brought up the emails spontaneously, as with Ms. Sommers, who said:

My principal is very, very, very good about getting out messages like, "if one of your kiddos looks like they're having a rough day"...We get a lot of good ideas and support from our principal in this area as well. For example a few weeks ago she sent out an email and it was a really great idea. It was "send a letter home to your parents"; and..., [the letter to parents] said, "I know some days might be rough, you know some days might be a little tougher than others. And you don't have to tell us what's going on at home. But if there's something we can do, all you have to do is write it on a little note, 'Handle with care,' when they come in the next day. So we know to give them extra love and extra support, no matter what's going on if you write those words, like we'll know what to do". So, I mean I thought that was a beautiful message. I sent that home to my parents as soon as she sent that.

Along similar lines, also unprompted, Ms. Davis said:

[Principal]'s very good about, on Monday morning she sends out little messages or memes to the staff just reminding us like, "Hey remember Johnny might not have had a good weekend at home you know he just doesn't come from a supportive environment so just make sure you reconnect with him on Monday and he feels safe coming here"...You know, sometimes the busyness of a Monday morning you forget that maybe one or two students didn't have the best weekend at home.

These various forms of collaboration and consultation were a very important means of learning about TIP for participants. Interestingly, though most teachers (11 of 15) had also had TIP-related training either within or outside of the district, four interviewees, all hired within the past 4 years, had not had TIP training. They

seemed to have learned about TIP almost exclusively by connecting with and observing others at Mills. One example of learning via observation is Ms. Mitchell, a member of the instructional support staff who had not received TIP training. Excerpts from her interview show how what other teachers are doing can change the behavior of individual educators. In the following excerpt she explains one way she learned to change her practice:

And all I saw [before] was, okay, these are the kids who are fine; these are the kids who give me trouble. And I didn't really have the brain tools to do anything with that information. I just knew these kids always behaved badly. And I didn't know what to do with them. But as I've worked there and as I have connected more with individual kids, and I also kind of sat down with myself and said okay, "what can I do differently because obviously there's something that I'm not doing right in my job, because I'm watching these other teachers able to handle the situation and I'm not, so what can I do differently." So I just, I took different pieces of what other teachers were doing. And that helped me a lot, and that in turn helped me help the kids.

Ten interviewees felt that more opportunities for collaboration focused on trauma-impacted students were needed. This is not surprising since the data clearly show that the onset of the pandemic had greatly reduced opportunities for collaboration and discussion among peers around TIP, while at the same time increasing the number of students impacted by trauma.

Theme 3: Participants See Resistance to TIP in Others

Most participants, including both administrators, believed that although resistance was diminishing, some members of the teaching staff still did not practice TIP. Ms. Anderson, for example, stated that some teachers simply are not motivated to attend training: "We can always have more training, but then you also have the teachers complaining, 'all I want to do is work in my classroom'." Similarly, Ms. Davis also described lack of interest in learning about TIP:

Some teachers view [trainings] as a waste of time like, "I've been teaching for so long I already know this". Or they're just "education comes full circle" is what I hear a lot of the older teachers saying, like, "Oh, we did that when we were first starting out."

Several interviewees believed that some teachers' lack of TIP use was due to the teachers holding beliefs inconsistent with TIP. For example, four participants reported that some teachers believe in a punitive approach to misbehavior. Ms. Baker said: "It's difficult to get all staff on board. It's very difficult [for some] to see the value of it, and not necessarily viewing it as students getting the easy way out or not getting punished enough." Ms. Eberhardt felt that most of the resistant teachers have shifted since the implementation of the Advance program, but she raised punishment as an early point of contention:

So the original program I do feel was successful. I do know that there was some teachers who did not feel that way because they felt that the children were not being reprimanded the way that they felt that the children should be reprimanded, such as... suspensions and things like that...

Views about punishment are closely related to other beliefs inconsistent with TIP that were held or believed to be held by some teachers, including beliefs about reasons students misbehave, beliefs about trauma, and beliefs about the role of the teacher. In terms of the first of these, as pointed out earlier, shifting one's understanding of why students misbehave from a choice or motivational view of misbehavior to a cognitive skills deficit view is key, but some teachers had not shifted in this direction. Ms. Johnson said: "I think a lot of teachers always view any acting out or not completing work or stuff, as just being difficult." Further, one participant believed some resistors felt that using a trauma-sensitive approach was unfair to the children who behave well. This perspective is consistent with the misguided idea that how students behave in school is a function of the choices they make, and that students who misbehave are roughly equally capable of appropriate and inappropriate behavior but they choose inappropriate behavior. The perspective that TIP is unfair to students who behave well also falsely assumes that the students who behave well actually want to behave badly and only behave well because otherwise they would get in trouble.

Related to beliefs about reasons students misbehave is resistance to TIP linked to the definition of "trauma." Ms. Davis and Ms. Johnson reported that some teachers perceived that the word "trauma" should not be applied to students at Mills because Mills students have not actually experienced trauma. Ms. Davis said: "I do think a lot of teachers in our area get very turned off by the word trauma because...you don't associate trauma with our clientele here." She believed further that convincing teachers that there are trauma-impacted students at Mills would help with TIP buy-in. Similarly, Ms. Johnson felt that some teachers who support TIP in general believe that some students should not be included in the trauma impacted category: "I don't know that anyone's against [TIP]. I think there are people that don't necessarily always agree with who's put in or what things are being passed as trauma."

Interestingly, three interviewees themselves appeared to believe that the word "trauma" is overused at the school. One interviewee, for example, stressed in her interview that students at Mills do not experience the kinds of real trauma that students in other communities experience. She said "I don't consider a bad divorce a trauma situation". She also indicated that de-escalating techniques that are used with students who are truly trauma-impacted should

not be used with other students, implying that this sometimes happened at Mills and that such students who misbehave need actual punitive consequences. Another teacher similarly felt that some Mills students are designated trauma-impacted for minor difficulties that do not constitute trauma, which leads TIP to be used inappropriately for those students. She believes students who misbehave and are not trauma-impacted should sometimes be removed from the classroom, but that "some of the kids are just excused" and not held accountable. In her view, that leads to "Some of the kids that are smart enough to see that in play, then become manipulative about it." A third teacher who was a very strong proponent of TIP emphasized that she feels consequences for negative behavior are necessary for all students, and that the school does not do this. Like the previous teacher, she feels bad behavior is sometimes rewarded in the school:

Not that I want anyone to be punished like in a horrible way, I just want them to know, there are logical consequences that we all face. And so, I don't want them to get out of that, or I don't want them to go to the middle school or high school or go out in life and have a consequence that's extreme and they're like, "what, how, why am I getting this?"

Beliefs related to the role of the teacher also emerged from the interviews as a source of resistance. Interviewees reported that some teachers believe it is the role of parents, not teachers, to deal with students' psychological problems. Further, two participants discussed the problem of teachers who believe their role is to focus on academics rather than socio-emotional skill development. For example, in the following quote a participant describes how some teachers have an efficiency mindset focused on academics which makes them hesitant to spend time on social-emotional skills:

Some people are very "Ooh I'm farther behind than my neighbor in math," or "I'm farther behind in reading." Maybe. But did you make a better connection with the kid, did you make that kid's life better? ...Most kids will catch up with that math...

A final factor believed to impact teacher buy-in to TIP was social standing, especially social proximity to the principal. For example, some interviewees mentioned that they think teachers who were socially closer to and liked by the administrators were more likely to incorporate TIP, and that staff who do not feel included or valued by the administrators were demotivated to implement TIP. This perception is consistent with one interviewee's observation that the very first staff members that the administrators approached when they decided to implement TIP were usually "the younger teachers or the teachers that [the two leaders] had close relationships with that knew how [the leaders] operated more..."

Theme 4: Implementation of TIP is Difficult

A factor that that came up in several interviews is how difficult it is to apply trauma-informed approaches when students behave inappropriately. Four teachers and the administrators talked about this. Ms. McDonald said: "It takes a lot of patience. Yeah, it takes a lot of patience and a lot of work." Ms. Davis spoke about how challenging it had been to change her strategy:

So just approaching them and questioning them differently, "what's going on today...is there something that happened at home last night or this morning that you want to talk about, is there anything that you want to talk about", being more sympathetic with them and not so much "what's wrong with you." So, those kinds of techniques definitely came from the training.

Was that hard to switch?

Yeah, yeah, it was very hard.

The assistant principal also talked about some teachers' difficulty with this transition:

It was tough trying to find the balance. You had some teachers that went maybe an inch into it, just put their toe in the water. And then you had some teachers that wholeheartedly embraced it and jumped in feet first, head first, and ran the mile, but then they kind of threw all [behavior management] out the window, and...they were like, "oh I've let this go too far."

Ms. Baker, who came to Mills with a lot of TIP training under her belt, was asked directly by the interviewer how hard it had been to implement a trauma informed approach when a specific child misbehaved. She said:

It was awkward, to be honest. I remember not knowing what to do - because in the moment - you know you read all of these things and all of these things you can do and these different discussions and you know, everything. But in the moment, it can be hard...

Implementation of trauma-sensitive behavior management strategies is not only difficult from a skills perspective, it is also taxing. Five teachers discussed how difficult it was to handle such students. Ms. Faber, for example, said that having two Advance students in her classroom "was definitely challenging for me, I mean those two students alone were, you know, challenging, very different backgrounds. A lot of trauma. A lot of things going on. A lot of things that I hadn't dealt with..."

Unsurprisingly, data from interviews and staff meetings indicated that the COVID-19 pandemic made implementation of TIP even more challenging, for two reasons. First, administrators and teaching staff at the school felt that the COVID-19 pandemic had had a negative effect on student development. Several participants talked in interviews about learning loss and weak social-emotional skills of students due to COVID isolation and the conditions of COVID schooling. Ms. Faber, for example, said:

I think the learning loss for the kids, I think the maturity level for the kids. I mean we feel like what we're seeing this year, that kids are about two years behind maturity wise, which makes sense because they were basically not in their typical school setting environment for a year and a half, you know or longer, so that's kind of why this year I think, is more challenging just because all those things are kind of adding up together and now we're having to deal with it.

Second, although the weaker social-emotional skills in students and the trauma many had experienced due to COVID increased the need for TIP, the pandemic had severely curtailed the trauma-informed practices that the school and teachers were able to implement. Participants mentioned many TIP practices that had been part of Advance that the school was no longer able to do, including calm rooms, the presence of a TIP interventionist, a mentoring system for trauma-impacted students, TIP training, staff wellness activities, among others. The principal mentioned that during Advance, if a teacher needed help with a particular student, the practice had been for one of the administrators to take over the class while the teacher took the student to a calm room to talk to the student to find out what was going on. Time and space restrictions meant that she and the assistant principal could not do that anymore.

However, even if school leaders had been able to prioritize TIP training and other aspects of the Advance program, the data indicate that teachers were so stressed and stretched in Fall 2021 due to COVID circumstances, many would not have been able to handle pressure from the administration to adopt new TIP practices. The following quote from Ms. Hansen supports the notion that the principal was wise to take a gentle, non-coercive approach to TIP during the 2021-22 school year. When asked about the principal's decision to focus more on school philosophy and culture rather than a stronger approach, she said:

I think the hurdle that you would have at this moment is that people feel like they're still drowning under COVID. And I think that although this is probably the time that our kids need it the most, I think it'd be split in half. Half the teachers would be like, absolutely we need to do something, and the other half just have their own weight on them because they're struggling. I think we all are struggling in some way...So yes I think it's needed more than any time that I've ever taught, but I think you would struggle, because they [teachers] would view it as one more thing.

Theme 5: The Pandemic Facilitated Movement to a School-wide Approach to TIP

The tragedy of the pandemic has been enormous and should not be minimized. Yet, study data indicate that the COVID-19 pandemic facilitated or perhaps accelerated the use of TIP as a universal or schoolwide approach. As indicated earlier, Advance, which targeted the students most in need of trauma-sensitive attention, had been put on hold during COVID due to resource restrictions. Thus in 2021-2022

leaders focused on creation of a trauma-informed philosophy and culture in the school as a whole. Ten interviewees alluded to the whole class or schoolwide approach, some indicating that it was an important shift. For example, Ms. Lowell acknowledged that while the newer approach did not meet the "deep needs" of trauma-informed students as effectively as the Advance program had, the reach was wider:

I think that the addressing since COVID...is reaching more students...[Advance] was intended for students that were trauma, and...it met their needs...but I think that where we're at now is more school based. It's not just those students, it's school based. So [a schoolwide philosophy approach] is trying to [address] those students that are trauma but also any students that are struggling.

Further, some participants felt that the pandemic-related socio-emotional deficits teachers were seeing in so many of their students would lead to greater use of trauma informed strategies aimed at the whole class, such as SEL and mindfulness. For example, similar to Ms. Lowell, Ms. Eberhardt felt that more teachers were seeing the need for and using such strategies because of COVID:

I feel like the problem is it's not just a set of kids at this point, it's the main population of children that need these trauma informed practices because they just feel that this pandemic has been that traumatic for kids. So I feel like teachers...who didn't feel comfortable, even like last year, this year they're like, "How do you, where's that workbook you have [on mindfulness or SEL]".

She supported this expansion, as she felt TIP should be a "universal intervention education reform." In another example, Ms. Hansen herself felt that seeing the social emotional issues in students this year has led her to consider incorporating class wide trauma-sensitive strategies, such as Second Step.

Once the difficulties associated with COVID were over, the principal intended to re-instate Advance. Although it was not yet the case at Mills, it is worth noting that a combination of Advance with a schoolwide approach would fit with many experts' beliefs that TIP should be a multi-tiered system of support, involving a set of universal supports, a set of extra resources for students at a higher level of need, and individualized supports to a few students with the highest level of need (Gubi et al, 2019; Hoover, 2019; Keown et al, 2020; Von der Embse et al, 2019). Ms. McDonald specifically referenced such an approach:

I think it should be more of a leveled system...I think that people don't realize how...much trauma that you actually could bring with you. And how much of these kids do possibly have slight doses of it, so that's where...maybe there's a leveling, like... in RTI...Like these are our Tier Ones that would be the general population; you have the Tier Twos that they've experienced things but they had to have support but they might still need something; and then you have like your Threes or something where you're like, these

[need] strong interventions. It almost to me seems like it should be something like that.

Discussion

Findings from the study indicate that interviewees support TIP and perceive that it is fairly widely practiced across the school. They also describe some challenges with implementing TIP, some of which were exacerbated by the COVID pandemic. Cutting across the themes that emerged from the interviews are two significant takeaways: the importance of relationships in the spread of teaching practices and beliefs; and the potential significance of the packaging or repackaging of reform.

Importance of Relationships

One of the key findings in this study is the importance of both teacher-student and teacher-peer relationships in the success of TIP. In terms of the former, the interviews indicate that one reason many teachers supported and used TIP despite the challenges is that it led to enhanced relationships with students. Most teachers want good relationships with students, but not all teachers have the skills to develop them (Jennings & Greenberg, 2009). SEL curricula and other practices consistent with TIP have been found to provide teachers with motivation and guidance for developing better teacher-student relationships (Ablon & Pollastri, 2018; Jennings & Greenberg, 2009; Keown et al, 2020; Noyes, 2020; Schnyder et al, 2021). In turn, enhanced relationships with students, especially with trauma-impacted students, may provide rewards for teachers that mitigate the challenges of dealing with the difficult behaviors of trauma-impacted students in the classroom. Indeed, Brunzell et al (2018) found that although teachers can get compassion fatigue when working with trauma-impacted students, they also get "compassion satisfaction" when working with the students is invigorating and satisfying. These rewards provided by the enhanced teacher-student relationship resulting from TIP can be seen as part of the "relative advantage" of the intervention, or how much better the intervention is perceived to be than the practice it is replacing (Dingfelder & Mandell, 2011; Rogers, 2003). According to Diffusion of Innovation theory, relative advantage is an important factor in the dissemination of a new intervention.

Relatedly, the study also found that relationships with school colleagues and leaders around TIP were very important to the participants, who highly valued the communication and collaborative opportunities that enabled them to talk about and compare TIP practices with those they worked with. These findings are consistent with research on spread of interventions like TIP showing that social networks and relational ties are often more important influences on adoption of an innovation than the effectiveness of the intervention

or a person's knowledge of it (Rogers, 2003; Dingfelder & Mandell, 2011; Woodland & Mazur, 2019). One reason, of course, is that teachers who work in a collaborative atmosphere are likely to be more effective as they are able to get ideas from others and share problems and brainstorm solutions. They also get emotional support from each other, and compassion satisfaction, mentioned above, is more likely to occur when teachers feel supported and have the opportunity to share ideas with others (Brunzell et al, 2018).

Another reason that collaboration among peers might positively effect adoption of TIP is that social status and prestige influence people's perceptions of relative advantage (Rogers, 2003). Some of the interviewees alluded to in-group/out-group status having an impact on teacher views about TIP, and some advocates of TIP indicated they were friends with the principal and/or greatly respected the principal. Since the principal was encouraging TIP in the school, for these teachers an added advantage of using TIP practices might have been pleasing their friend and/or boss.

This dynamic is one reason that teachers who have closer relationships with and more in common with well-networked personnel and school leaders may be more likely to use TIP than those who are less well networked. Another reason relates to a theory called Strength-of-Weak-Ties. Research shows that, unsurprisingly, in social networks ideas get exchanged most often between people with strong ties; people with such ties communicate with each other frequently and tend to be similar in terms of things like education level, SES, and values (Rogers, 2003). However, important information travels between people who have weak ties with each other, not strong ties, because your close ties rarely have information that you do not already know (Rogers, 2003). Thus for a new practice to spread widely, there have to be mechanisms within the organization for people with weak social ties and who are dissimilar to have face-to-face interaction (Rogers, 2003).

TIP as a New Package for Old Practices

This study's findings also highlight the significance of the packaging and framing of instructional reform. An irony inherent in teacher or school adoption of TIP is that many of the practices included in TIP are not new. Rather, TIP comprises to a large degree evidence-based instructional practices and skills that have been known for many years but are not generally applied. These include using democratic and restorative approaches to dealing with students who chronically misbehave, providing mental health support, and building good relationships with all students (John-Pierre & Parris; Pearson, 2019; Warnick & Scribner, 2020). These approaches are not widely used despite decades of solid evidence mainly because the dominant ideology of behaviorism and meritocracy in

the U.S. makes it difficult for institutions and individuals to move away from punitive approaches (Pearson, 2019; Warnick & Scribner, 2020).

Our data indicate that some people at Mills needed only a nudge to move to TIP. For these teachers training plus administrative and peer support was enough to shift their mindset toward a realization that students' socio-emotional needs need to be met before they can learn, and that punitive approaches do not address those needs. A nudge was not sufficient for all teachers, however, and we speculate that two features of TIP helped teachers who had more trouble letting go of punitive approaches move to at least partial acceptance of TIP. First, some of the relatively new trauma-specific information in TIP about how trauma can cause neurocognitive skills deficits in children appears to have helped teachers move away from the dominant view by providing an adequately compelling rationale for negative behavior not being the fault of the child. In other words, TIP-related approaches to instruction and behavior management are effective and developmentally appropriate for all children, but the ideology of behaviorism and meritocracy is so pervasive in the US that unless you give teachers an explicit reason why students' challenging behavior is beyond the students' control, they will not move away from punitive approaches. TIP provides that reason by showing how the brains of some children have been damaged in a manner that is outside of the child's control, leading to problems in self-regulation, relationships, and other areas.

The second feature of TIP that may have helped some teachers move away from punitive approaches is flexibility, a characteristic that Diffusion of Innovation Theory research has shown increases chances of adoption. The original Advance program was flexible in that although the program required a specific set of classroom practices, these could be implemented in varying ways and to varying degrees. For example, practices such as morning circles and comfort corners, to name just two of the Advance TIP practices, can take many different forms and still be effective. The school culture and philosophy approach of the 2021-22 school year seems even more flexible: school leaders encouraged a set of trauma-sensitive practices, and made available a set of resources to help teachers with implementation, but teachers could try out selected practices as they desired without being required to adopt the whole set.

The flexibility of TIP implementation at Mills likely enhanced adoption of it, for a few reasons. First, TIP resembles what Dearing (2009) refers to as an intervention cluster, or a logically-related set of interventions that complement each other and/or are interchangeable with each other. Clusters allow people to select pieces of an intervention that seem

less complex and more compatible with current beliefs. Taking the first step is the biggest barrier for adoption of an innovation, after which the threshold is lower. So adoption of one practice in a cluster makes it more likely a person will adopt other practices as well. Clustering also provides people with choices, which enhances autonomy and sense of empowerment. Flexibility in an innovation is also helpful because it allows re-invention, or customization to one's own situation (Rogers, 2003). Interventions that can be re-invented are more quickly adopted and better sustained than inflexible ones that need to be implemented with fidelity as they increase compatibility by allowing people to better align the intervention to their pre-existing beliefs and values.

Interview and meeting data show that teacher re-invention of TIP at Mills was evident, as individual teachers spoke of specific ways they or their grade-level groups had decided to implement mindfulness, morning meetings, and other trauma-sensitive practices. The data also indicate that flexibility may have helped some teachers who were not ready to entirely abandon punitive approaches to at least use TIP in some cases. For example, the data indicate that some teachers perceived that at Mills non-punitive trauma-sensitive approaches to misbehavior were sometimes used with non-trauma-impacted students who do not "deserve" it and who need traditional punishment. Such teachers appear to still view some students as needing punishment, but at least accept use of non-punitive approaches with students they perceive to have experienced trauma. The flexibility in this case may allow a way in, because it makes a way for TIP to be more compatible with their beliefs. It also shows how putting old practices in a new package may help facilitate instructional reform.

Conclusion

TIP is an extremely important evidence-based reform that both helps heal students who have experienced trauma outside of the school and prevents additional trauma from occurring in the school setting. Implementation of TIP in schools can reduce behavior problems, increase achievement, and keep students in school, especially in the case of children who are already experiencing racial and socio-economic oppression (Crosby, 2015). It also increases teacher satisfaction and reduces teacher stress (Crosby, 2015). However, implementation of complex interventions like TIP is challenging (Alisic, 2012; Blitz et al, 2016). The study findings highlight the importance of collaboration and social relationships in school reform as well as the challenging and delicate task of shifting entrenched damaging and counterproductive beliefs and practices of members of the teaching profession toward practices and beliefs that are more developmentally appropriate, ethical, and equitable.

Footnotes

¹Names of individuals, programs, and institutions have been changed.

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Perceived Parenting Styles and Emotional Control as Predictors of Peer Bullying Involvement

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Abstract

In our study we tested a model of the relationships among students' perceived parenting styles, their emotional control and peer bullying involvement, since family characteristics are understudied and unclear in comparison with individual and school factors of peer bullying. Our sample included 202 students from 7th and 8th grade from 14 lower secondary schools. The resulting model showed that the authoritative parenting style positively predicted emotional regulation and observation of bullying. The authoritarian parenting style positively predicted relational and physical bullying with teasing and observation of bullying, and negatively emotional control. Emotional control as a mediating variable negatively predicted all forms of involvement in peer bullying. The results indicate the importance of promoting self-regulation skills in adolescents. Some practical implications for parents and school staff are discussed.

Keywords:

Parenting Styles, Emotional Control, Peer Bullying, Adolescents

Introduction

Peer bullying at schools is described as aggressive, intentional acts carried out by a group or an individual repeatedly and over an extended period of time against a victim who cannot easily defend him- or herself (Olweus, 1993). Newer definitions add an imbalance of power (physical or psychological) between the victim and the bully (e.g. Volk et al., 2017). Research suggests that it is a widespread phenomenon with serious short- and long-term consequences for students. A meta-analysis by Gini and Pozzoli (2009) revealed that students involved in peer bullying are at higher risk of psychosomatic problems, low emotional adjustment, poor peer relationships, health problems, and problems with academic adjustment.

However, peer bullying is not only the result of the individual characteristics of students who are directly involved in it, but, following Bronfenbrenner's (1979) socio-ecological systems theory, there is an interaction among individual, family, and school factors, as well as the influences of the media and wider society. In our study, we focused on parental style as one of the family characteristics that predict peer bullying involvement. This is based on Nocentini et al.'s



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(2019) identification of three groups of family variables – contextual family variables (e.g. parents' mental health, domestic violence), relational family variables (e.g., authoritative parenting, communication), and parents' individual processes (e.g. parental beliefs about bullying, parental knowledge about strategies to manage bullying situations).

Although these factors have received more attention in recent years (Nocentini et al., 2019), they remain understudied compared to research addressing individual (peer) and school factors.

Because previous research demonstrates that emotional regulation is one of the predictors of adjustment throughout development (Cole et al., 2017), and is one of the links between parenting practices and child adjustment (Eisenberg et al., 2004), this was another construct we considered important in examining the relationship between family characteristics and peer bullying involvement. Furthermore, in a longitudinal study of adolescents, Dickson et al. (2019) found that less favourable parenting was associated with impaired emotional regulation, which predicted a higher likelihood of perpetration of peer bullying and victimization by students in the following year.

Our goal, therefore, was to examine the relationship between students' perceived parental style (family characteristic), students' self-perceptions of emotional control (individual characteristic), and frequency of involvement in peer bullying as perpetrator, victim, or observer.

Parenting styles

Baumrind (1971) proposed three main parenting styles, which are a combination of parental control and parental warmth. She described authoritative parents as controlling and demanding on the one hand and warm, rational, and receptive to the child's communication on the other; authoritarian parents were described as distant, controlling, and less warm; and permissive-style parents were described as noncontrolling, nondemanding, and relatively warm. In her later work Baumrind (2005) proposed that parental behaviour, as perceived by children, has two dimensions – demandingness (i.e., controlling behaviour, setting limits and expectations for the child) and responsiveness (i.e., responding to the child's needs, supporting and maintaining warm communication). Thus, another parenting style was added to the existing three – the disengaged parent who is neither demanding nor responsive. Nonetheless, and despite the fact that some previous researchers have expanded the study of parenting variables beyond parenting styles (e.g., Gómez-Ortiz et al. (2014) added parental use of humour and autonomy support; Georgiou and Stavrinides (2013)

introduced parent-child conflict, parental monitoring, and child disclosure in examining the relationship between family characteristics and peer bullying), for the purposes of this study, we drew on the long tradition of the three parenting styles originally proposed as predictors of emotional control and peer bullying involvement. Several studies have consistently shown that children of authoritative parents are better adjusted (Steinberg et al., 1995) and have greater academic and psychosocial competence (Mahapatra & Batul, 2016).

Parenting styles and emotional control

Fosco and Grych (2012) point out that children's emotional regulation is initially shaped by their first interpersonal context, the family, and that children exhibited more emotional regulation when their parents showed warmth and sensitivity to their emotions. Similarly, in a longitudinal study with adolescents, Herd et al. (2020) found that a positive family environment, as measured by parents' emotional regulation, parenting practices, and the quality of the parent-adolescent relationship, was associated with increases in emotional regulation on later measures. In addition, Morris et al. (2007) argued that the family environment influences the development of emotional regulation in three ways: i) through observation, ii) through specific parental practices and behaviours, and iii) through the family emotional climate (quality of attachment, parenting styles, family expressiveness, etc.). Specifically, the authors found that parental responsiveness and negativity, the most salient features of parental styles which regard to the current study, influence children's emotions, emotional competence, and emotional regulation. In particular, authoritative parenting helps children to acquire more constructive emotion-coping strategies (Chan, 2011) and to have more effective emotional regulation (Mahapatra & Batul, 2016).

Parental styles and peer bullying involvement

Several studies examined the relationship between parenting style and their children's involvement in peer bullying as perpetrators or victims. Georgiou (2008) reported that parenting style was associated only with victimization but not with perpetration of peer bullying, i.e., children of permissive mothers were more likely to be victims than children who received other parenting styles. Malm and Henrich (2019) reached somewhat different conclusions in a longitudinal study – namely that poor relationships between mother and child were found to predict bullying perpetration, but not victimization. Alizadeh Maralani et al. (2019) found that an authoritarian parenting style predicted the role of perpetrators in peer bullying, a permissive style the role of victims, and an authoritative parenting style was characteristic of students who were not involved in peer bullying. Charalampous et

al. (2018) reported that the authoritative parenting style predicted perpetration, but also victimization in bullying. Conversely, the authoritative (or as the authors call it, flexible) parenting style was a negative predictor of all roles in peer bullying, whereas the permissive style predicted perpetration only. Martínez et al. (2019) reported different findings, as in their study permissive parenting style was found to be a protective factor for experiencing peer bullying, while authoritarian parenting style was a risk factor for this. In a meta-analytic study, Lereya et al. (2013) found that positive parental behaviors (authoritative parenting, parent-child communication, parental involvement and support, supervision, warmth, and affection) protected children from becoming victims of peer bullying, while negative parental behaviors (abuse/neglect, maladaptive parenting, and overprotection) predicted a greater risk of children becoming victims or bully/victims. Interestingly, Broll and Reynolds (2021) found no association between parenting styles and bullying offending or victimization. Therefore, the results of the aforementioned studies and the studies included in the systematic review by Nocetini et al. (2019) suggest that the association between parenting styles and bullying involvement is inconclusive. In addition, we found no studies that considered the association between parenting styles and the role of witnesses to bullying among peers (observers).

Emotional control and peer bullying involvement

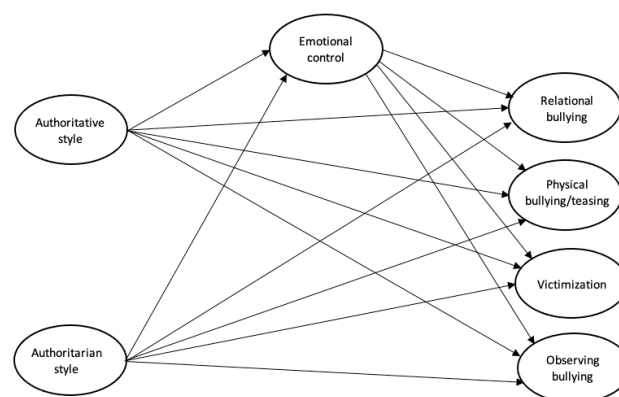
Among the important aspects of successful and adapted functioning in children is emotional regulation. Thompson (1994) defines this regulation as the internal and external processes involved in initiating, maintaining, and modulating the occurrence, intensity, and expression of emotions. One of the features of emotional regulation, which was also used in our study, is emotional control, which Rueda et al. (2022, p. 6) define as "an ability to regulate and modify emotions according to the circumstances in which the person finds themselves, for example, to overcome obstacles in everyday life." In the context of peer bullying, children with low emotional regulation have been shown to repeatedly violate social norms and rules, and were at risk of developing psychological and social maladjustments (Eisenberg et al., 2004). Mahady Wilton et al. (2000) suggest that poor emotional regulation may be a risk factor for chronic victimization. This is also consistent with the findings of an emotional intelligence study of a sample of Australian adolescents, in which Lomas et al. (2012) found that low emotional control was associated with more victimization. Blake et al. (2012) also indicated that adolescents with emotional dysregulation, which includes immaturity, lack of self-control, and poor social skills, may be at risk for peer victimization. However, Bettencourt et al. (2013) noted that such characteristics can also lead to bully/victim and bully roles.

The Aim of the Study

The aim of our study was to investigate the relationships among adolescent students' perceived parenting styles, their perceived emotional control, and their involvement in peer bullying. According to the findings of previous studies presented in the Introduction section, we hypothesized a model in which parenting styles are associated with emotional control, which is in turn associated with involvement in peer bullying.

Figure 1

The Tested Model of the Relationships Among Parental Styles, Emotional Control and Peer Bullying Involvement.



Method

Participants

Our sample included 202 7th (46.5%) and 8th grade (53.5%) students from 14 lower secondary schools from different statistical regions in Slovenia. Girls represented 51.5% of the sample. The average age of the students was 12.94 years ($SD = 0.71$).

Instruments

Students reported their perceptions of parenting styles, emotional control, and involvement in peer bullying.

To examine parenting styles, we used the *Parenting Styles and Dimensions Questionnaire-Short Version* (PSDQ-Short Version; Robinson et al., 1995; Slovenian translation and adaptation of the version for parents Hacin, 2019; the version adapted for children was created by the authors). The questionnaire contains 32 items in which students indicate on a 5-point scale how often their parents behave in a certain way (1 - never, 2 - rarely, 3 - occasionally, 4 - often, 5 - always). The questionnaire measures three parenting styles: authoritative, 15 items (e.g., *My mother/father comforts me and understands me when I am upset*, $\alpha = 0.92$); authoritarian, 12 items (e.g., *My mother/father explodes with anger at me*, $\alpha = 0.82$); and permissive, 3 items (e.g., *My mother/father announces punishments but does not carry them out*, $\alpha = 0.56$). Confirmatory

factor analysis showed the marginally acceptable fit (according to the criteria listed by Hu and Bentler, 1999) of the factor structure proposed by the authors of the original questionnaire with regard to our data (CFI = 0.937, TLI = 0.932, RMSEA = 0.058, 90% CI [0.051–0.066], SRMR = 0.089). Items 15 and 24 were excluded from calculating scale scores because of their high modification indices. We also decided to omit the permissive style scale from further analyses due to its low alpha reliability coefficient.

Emotional control was measured with items taken from the *Emotion Regulation Index for Children and Adolescents – Self report* (ERICA-S; MacDermott et al., 2010; translation and adaptation by Romih and Košir, 2018). The questionnaire consists of 16 items that the participant rates on a 5-point Likert scale (1 – strongly disagree, 3 – undecided, 5 – strongly agree). The subscales measure emotional control (7 items, e.g., *When I get upset, I can get over it quickly*), emotional self-awareness (5 items, e.g., *I am a happy person*), and situational responsiveness (4 items, *When adults are friendly to me, I am friendly to them*). For the purposes of the present study, only the Emotional Control subscale was used (for our sample, $\alpha = 0.71$). Confirmatory factor analysis supported the one-factor structure of the items (CFI = 0.988, TLI = 0.982, RMSEA = 0.041, 90% CI for RMSEA = 0.000–0.085, SRMR = 0.043).

Involvement in peer bullying was measured with an abbreviated version of the *Adolescent Peer Relationship Index – Bully Target: Bullying Behaviour/Victimisation* (APRI-BT; Parada, 2000; Slovenian adaptation Košir et al., 2018). We used three items for each form of peer bullying (verbal, physical, and relational) and constructed separate versions of the scale for observers, victims, and bullies/perpetrators. Students indicated on a 6-point frequency scale (1 – never, 2 – once or twice, 3 – 2 to 3 times a month, 3 – once a week, 5 – several times a week, 6 – every day) how often they performed/experienced or observed a particular behaviour during the current school year (e.g., *In the past year at this school, I have seen someone leave a student out of activities or games on purpose*). Exploratory factor analysis using varimax rotation was performed separately for each role in peer bullying, and the results showed a one-factor solution for observers and victims. The common factor explained 53% of item variance for observers ($\alpha = 0.89$) and 58% of item variance for victims ($\alpha = 0.89$, e.g., *In the past year at this school, I was ridiculed by students saying things to me*). For the role of bullies/perpetrators, we found a two-factor structure, namely relational bullying (three items, e.g., *In the past year at this school, I got other students to ignore a student*, $\alpha = 0.75$) and physical bullying with teasing (three items, e.g., *In the past year at this school, I got into a physical fight with a student because I didn't like them*, $\alpha = 0.72$). We dropped three items from this scale because they had high loadings on both factors.

Data collection and statistical procedures

Prior to data collection, the study was approved by the Ethics Committee of the Faculty of Arts at the University of Ljubljana. We also obtained parental consent for the students' participation in our study, as well as consent from students themselves to participate. Data were collected via online survey in April 2022 (Ika, 2022). School counsellors gathered students in computer-equipped classrooms and guided them in completing the survey.

We used SPSS 25.0 IBM for descriptive statistics and exploratory factor analyses and the R lavaan package (Rosseel, 2012) for confirmatory factor analyses and path analyses. It should be noted that we were not able to test the whole structural equation model with all measurement models and a model of relations between latent constructs due to the small sample size, so we decided to first analyse all instruments, calculate scores and then include these scores in the path model.

Results

Table 1 shows the descriptive statistics of the variables and Table 2 the correlations between the variables included in the model.

Table 1
Descriptive statistics for the constructs included in the model

	N	M	SD	Skew.	Kurt.	α
Authoritative style	202	3.70	0.79	-0.41	-0.70	0.92
Authoritarian style	202	1.83	0.59	1.04	1.29	0.82
Emotional control	202	3.59	0.57	-0.07	-0.36	0.71
Relational bullying	202	1.22	0.46	3.02	10.58	0.75
Physical bullying/teasing	202	1.46	0.67	2.10	4.52	0.72
Victimization	202	1.68	0.85	1.90	3.51	0.89
Observing bullying	202	2.25	0.98	0.84	-0.05	0.89

The results show that on average students perceive their parents' parenting style as occasionally to frequently authoritative, and as authoritarian less often (Table 1). They perceive their emotional control as moderate. Regarding the different roles of involvement in peer bullying, involvement in either form of bullying is least common. Somewhat more frequent is victimization and most common is involvement in peer bullying as an observer. It should be noted that skewness and kurtosis are high for all forms of active involvement in peer bullying (relational and physical

bullying with teasing and victimization), indicating that on average bullying has been observed, performed or experienced less than two or three times a month. The internal consistency coefficients for the variables included in the model are good or very good.

Table 2
Pearson correlations between the variables included in the model

	1.	2.	3.	4.	5.	6.	7.
1. Authoritative style	-	-.35**	.29**	-.20**	-.18**	-.01	.05
2. Authoritarian style		-	-.41**	.40**	.29**	.23**	.31**
3. Emotional control			-	-.38**	-.36**	-.30**	-.28**
4. Relational bullying				-	.39**	.19**	.38**
5. Physical bullying/teasing					-	.25**	.29**
6. Victimization						-	.40**
7. Observing bullying							-

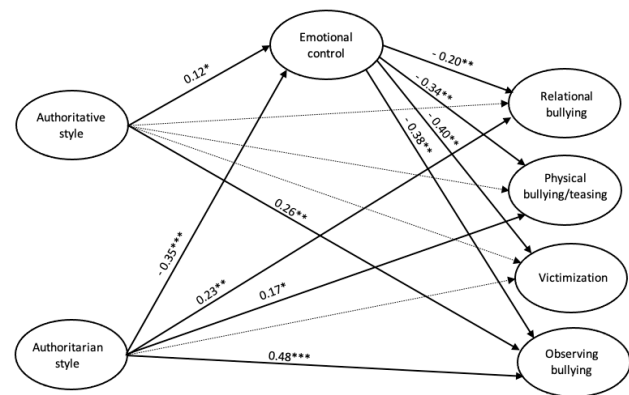
Note. ** p < 0.01

According to the results in Table 2, there is a low, but significant negative correlation between authoritative and authoritarian styles as perceived by the students in our sample. There are also very low but significant negative correlations between student-perceived authoritative parental style and frequency of relational bullying and physical bullying with teasing. Student-perceived authoritative parental style and their emotional control have a low positive correlation. Student-perceived authoritarian style correlates negatively with student emotional control and positively with all roles of involvement in peer bullying. The correlations are low, but significant. Student emotional control is significantly negatively associated with frequency of involvement in all roles of bullying, but the correlations are small. Table 2 also shows that the frequencies of involvement in all roles of peer bullying have low, but significant correlations.

Due to the low reliability of some scales that we used for measuring the examined constructs, we had to exclude some constructs from our model. The model we tested and report here includes only authoritative and authoritarian parenting styles as predictors of emotional control. This acts as a mediator variable and predicts involvement in peer bullying, defined as relational bullying, physical bullying with teasing, victimization, and observation of bullying (Figure 1).

The model in Figure 2 showed an excellent fit with the data, $\chi^2(20) = 195.36, p < .001, CFI = 1.00, RMSEA = .000, 90\% CI for RMSEA = .000-.000, SRMR = .000.$

Figure 2
The Resulting Structural Model of the Relationships Among Parenting Styles, Emotional Control and Peer Bullying Involvement



Note. * p < .05, ** p < .01, *** p < .001

Figure 2 shows the relationships among the variables included in the model. The results show that student-perceived authoritative parental style contributes to higher self-perceived emotional control and to a higher likelihood of students being involved in peer bullying as observers. Students' perceived authoritarian parental style negatively predicts their sense of emotional control and positively their involvement in bullying as a relational or physical perpetrator, and as a bullying observer. All forms of involvement in peer bullying were negatively predicted by students' emotional control.

Discussion

In our study, we examined the relationships among students' perceived parenting style, their emotional control, and their involvement in peer bullying. The results in Figure 2 show that students who perceive their parents as more authoritative report having higher emotional control. Although the path coefficient is small (.12), it is significant. It thus seems that children of parents who are more responsive to their feelings and needs, who talk to them and take their opinions into account, who involve them in planning, who set rules and explain to them the consequences of breaking the rules, and who try to comfort and understand them when they are upset, have higher emotional control. It means that these children feel that they are less likely to get upset when something does not go the way they want, and that they are able to calm down more quickly, have fewer outbursts of anger, are less likely to be disruptive at inappropriate times, and do not have such a hard time waiting to get what they want. The findings are consistent with those of Fosco and Grych (2012), whose results showed that children with warm and empathetic parents were better at regulating their emotions. Moreover, in a study of adolescents by Jabeen et al. (2013) an authoritative parental style was shown to have a significant positive effect on the children's emotional regulation. On the other hand, students' perceived

authoritarian parenting style was negatively (-.35) associated with their emotional regulation. Students whose parents used physical punishment, withheld privileges, or threatened or punished them without explanation, yelled at them, and criticized them when teaching order and discipline had weaker emotional control. The same was found in some other studies: negative parenting was associated with less adaptive emotional regulation (Calkins et al., 1998) and strict and conflictual parenting was associated with difficulties in behavioural regulation (Brody and Ge, 2001). Shaw and Starr (2019, deriving from Grolnick et al., 1999 and Sroufe et al., 1996) suggest that punitive or hostile parenting practices (features of authoritative style) could lead to children's suppressing negative emotions instead of discussing them in a supportive environment, and so reduce the possibilities to learn and practice effective emotional control strategies.

In terms of involvement in peer bullying, we found a positive relationship between the authoritative style and observers of bullying (.26). Students who perceived their parents' style as more authoritative were more likely to notice all forms of peer bullying (teasing, deliberate bumping into each other, physical altercations, spreading of rumours, encouragement to ignore, exclusion, and so on). This could perhaps be explained by the fact that parents with an authoritarian parenting style talk more with their children about rules and rule-breaking, and encourage them to talk about their problems and feelings and to express their opinions. We can assume that students with more authoritative parents are more sensitive to rule violations and perceive certain behaviours as peer bullying earlier than most others. We found no associations between the authoritarian parenting style and other forms of peer bullying involvement. These results are consistent with the findings of Broll and Reynolds' (2021) study, which showed no associations between parenting styles and peer bullying involvement. However, the same and even stronger association (.48) was found between authoritarian style and observers of bullying. It is possible that different parenting styles are associated with different roles students engage in as observers. For example, Pečjak and Pirc (2014) found differences between passive and active observers, ignorers, and defenders of the victim. Children with more authoritarian parents could be involved in peer bullying as active or passive promoters of peer bullying. Apart from this relationship, the model in Figure 2 also shows that the authoritarian style predicts relational bullying (.23) and physical bullying with teasing/ridiculing (.17). This means that students with more authoritarian parents are more likely to spread rumours, encourage others to ignore and exclude from activities (relational bullying), ridicule others, crash into or hit them (physical bullying with teasing). A positive relationship between the authoritarian style and perpetration of peer bullying has already been established in previous studies

(Alizadeh Maralani et al., 2019; Charalampous et al., 2018; Espelage et al., 2000).

Some previously established relationships were not significant in our model. For example, we found no association between the authoritative parental style and active bullying involvement (perpetration or victimization), which is not consistent with the findings of Charalampous et al.'s (2018) study, which found that the authoritative parental style negatively predicted peer bullying involvement. In light of previous research (Lereya et al., 2013; Martínez et al., 2019), one might also expect the authoritarian style to be associated with victimization, but we did not find this association in our student sample either. With the inconsistency of associations between parental styles and roles in peer bullying, it is necessary to note that the family is only one of many microsystems (Bronfenbrenner, 1979) that determines what role the student takes in peer bullying. This is also influenced by the student's personality traits, and most importantly, by the classroom culture, which is co-created by the teachers and students in each classroom with class rules and behaviours when bullying occurs.

Emotional control negatively predicted all forms of involvement in peer bullying. That is, students who had less control over their emotions were more likely to be involved in perpetrating or experiencing peer bullying and observing bullying. The results of several studies showed that poor emotional control was a risk factor for victimization (Blake et al., 2012; Lomas et al., 2012; Mahady Wilton et al., 2000). One possible explanation could be that children who are quick to get upset when things do not go their way, have outbursts of anger and are disruptive at inappropriate moments become targets of peer bullying because their behaviour does not conform to social norms and rules. It is also possible that they are unable to stand up for themselves and have difficulties in calming down and controlling fear, shame or feelings of hopelessness. As Blake et al. (2012) point out, there is a chance that such individuals are perceived as provocative victims by their peers. Lomas et al. (2012) explain these associations with one of the features of peer bullying dynamics, namely a power imbalance. They hypothesize that children with lower emotional management and control skills have less power in a bullying situation, because they are unable to respond appropriately to the perpetrators.

However, we also found a negative correlation between emotional control and bullying perpetration (relational and physical). Apparently, the same lack of emotional control skills that could be a risk factor for victimization could also lead to bullying perpetration. Bettencourt et al. (2013) argue that it is possible that students who are non-victimized perpetrators have other social skills that protect them from victimization.

Finally, more bullying has been observed among students with poor emotional control. It is possible that students who themselves have difficulty responding in accordance with social group norms (e.g., their classroom peer group) are more aware of other situations in which peer bullying occurs.

In summary, our findings suggest that emotional control is an important factor in exploring students' involvement in peer bullying. It appears that better social and self-regulation skills are significant protective factors against any role in peer bullying. Our study also showed that parental style can help or hinder emotional control.

Implications

Two extensive meta-analytic studies (Huang et al., 2019; Tfofi & Farrington, 2011) have shown that it is important to include the parental component in peer bullying prevention programmes. Thus, it is important to incorporate knowledge about the relationships among parental styles and emotional control and peer bullying involvement into such programmes, as previously suggested by Lereya et al. (2013). One way is to directly attempt to change the less appropriate practices that parents use in their interactions with children. It is possible that demonstrating effective strategies for reducing detrimental consequences for students involved in peer bullying to the parents would motivate them to reflect on their practices and change their behaviours. Another way is to encourage parents to put more effort into implementing activities that would promote better emotional control in their children. It is also important to educate parents that one of the most important mechanisms for learning certain behaviours is observation and modelling (Bandura, 1977). Parents should be aware that how they communicate with their children, how they solve problems with them, how they themselves demonstrate emotional control and so on, models for their children how to apply these skills in their interactions with peers.

The important influence of weak emotional control on involvement in peer bullying is also important information for teachers and other school personnel. Our findings suggest that programmes to develop emotional regulation should be implemented in schools, which is emphasized also in "The European Framework for Personal, Social and Learning to Learn Key Competence" (Sala et al., 2020). Since it is realistically difficult to expect that parents will significantly change their parenting styles, the compensatory role of the school in the development of emotional regulation (especially emotional control) is all the more important. Although schools have little or no ability to promote changes in parenting styles, teachers and other school staff could make efforts to implement activities to promote emotional

regulation in students. In addition, it may be possible for schools to identify students with weak emotional regulation skills early on, which would help reach the most vulnerable students and protect them from the potential consequences of involvement in peer bullying (Lomas et al., 2012).

Limitations, Strengths and Future Directions

Although we believe that the results of our study make an important contribution to the research of the relationships among family characteristics, emotional control, and involvement in peer bullying, there are some limitations that should be mentioned. First, our results are based solely on self-reported data, which means that responses could be subject to bias, such as social desirability. In addition, we measured students' perceptions rather than parents' actual behaviours. Second, because of the small sample size, we were unable to define roles in peer bullying as categories; instead, we defined bullying involvement as an interval variable for more or less involvement. Therefore, we were unable to include in our model a group of students who are in both roles – as bully/victims – and who are assumed to be particularly vulnerable. For example, Juvonen et al. (2003) reported that bully/victims have the most problems related to behaviour, school, and peer relationships. According to Bettencourt et al. (2013), aggressive victims are most likely to perceive ambiguous situations as threatening, experience emotional dysregulation, and respond aggressively to peers. Furthermore, we included the group of observers of peer bullying in our model, but without distinguishing between the roles they take in observing bullying, which would need to be considered in future studies. Even though path analysis was used, the direction of the relationships reported here is preliminary. As such, longitudinal studies are needed to determine the directionality of the relationships among the constructs studied. In our study, we included only one specific family relational variable (parental style), so it would be beneficial to include other family and individual characteristics in the model, such as children's relationships with their siblings as a potential mediator or moderator variable in the relationship between parental style and emotional control. Another limitation relates to our instrument for measuring parental style, namely the low internal consistency of permissive style, which prevented us from including one of the three traditionally researched parental styles in the model. In future research, special attention should be paid to the use of valid and reliable instruments when studying the characteristics of parental styles.

Despite these limitations, we believe that one of the strengths of our study is that we focused on adolescents, who are rarely considered when looking at the relationships between parenting

styles and emotional control because most studies have been conducted on young children (Shaw and Starr, 2019). Another strength is that we included the perspective of bullying observers, which to the best of our knowledge has not been considered in previous studies of the relationships between parenting styles and bullying involvement.

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Development of Self-Concept in Multi-Grade 3rd and 4th Classes

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Abstract

The assumption that multi-grade learning enhances and sustains positive self-concept is widespread, although neither theory nor empirics have yet allowed for firm conclusions. This paper reports on a representative longitudinal study of multi-grade learning in grades 3 and 4 comparing the development of students' self-concept in reading in multi-grade and single-grade classes, also providing a differentiated analysis of the development at varying performance levels. The results show that self-concept is less stable in multi-grade classes. At the end of grade 3, students' self-concept in multi-grade classes is lower than in single-grade classes, although the average achievement level is higher. This effect is mainly ascribed to low-achieving children; however, all students' self-concept recovers by the end of grade 4. Regarding students with a very low self-concept, they are found to a comparable extent in both multi-grade and single-grade classes, but the number of these students is low and the affected students change. The data indicates that pedagogical support is needed, especially in grade 3, to mitigate the effects of social comparison. Further analysis should include the quality of multi-grade teaching implemented in the classroom and its effects.

Keywords:

Multi-Grade; Multi-Age; Stage Classes; Development; Self-Concept

Introduction

For school learning, self-concept is decisive on several dimensions: It is considered part of the students' identity and core of their personality (Haußer, 1995; Choi & Kyung-Hwa, 2021), therefore its promotion has an intrinsic value for basic educational processes in the domain of personality development (Beutel & Hinz, 2008). Moreover, self-concept is considered to play a significant role in achievement development (Arens & Niepel, 2023; Ehm, Hasselhorn & Schmiedek, 2019; Guay, Marsh & Boivin, 2003) and is regarded as a protective factor in challenging situations and whilst facing adversity (Jaarguizar, Garaigordobil & Bernaras, 2018). This is of particular importance for children in the German education system where after four years of joint primary schooling students are usually assigned to different types of secondary schools according to their achievement levels (Martschinke & Kammermeyer, 2003;



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Coelho, Marchante & Jimerson, 2017). In general, self-concept is differentiating during the primary school years (Byrne & Gavin, 1996; Ehm, Hasselhorn & Schmiedek, 2019; Marsh, Byrne & Shavelson, 1988; Marsh, 1992). Numerous studies have shown that during these years students' self-concept tend to be unstable and decline (Martschinke & Kammermeyer, 2006; Helmke, 1998; Sewasew & Schroeders, 2019).

Multi-grade learning is supposed to enhance and maintain a positive self-concept that both promotes learning and builds a self-serving self-esteem (summarizing: Veenman, 1995). These assumptions rely, among other things, on the decoupling of self-concept and social comparison (Martschinke & Kammermeyer, 2006) and on the achievement gap in multi-grade tutor-tutee relationships which is perceived as predictable and thus not threatening (Laging, 2010). However, these roles (tutee in the first year, tutor in the second year within the typical cycle of two-years-combination in German multigrade classes) could potentially lead to a destabilization of the self-concept, which could have a differential effect on students of varying performance groups.

This is the primary focus of this paper: On theory and research on self-concept in general and in multi-grade settings in particular, we report results from a representative longitudinal study on multi-grade learning in grade 3 and 4 comparing the development of self-concept in multi-grade and single-grade classes, providing a differentiated analysis of the development at varying performance levels.

Self-Concept as an Important Element of School Learning in Multi-grade Classes

Self-Concept and School Learning

Self-concept refers to ideas, appraisals, and evaluations that individuals have regarding their talents or abilities (Bandura & Wessels; 1994; Moschner & Dickhäuser, 2018). Cognitive representations that relate to school performance are referred to as academic self-concept, which can further be divided into specific subdomains. Shavelson et al. (1976) developed a model of subject-specific classification. Marsh et al. (1988) modified this model differentiating between verbal and mathematical self-concept. Nowadays, this empirically proven model forms the base for numerous empirical studies (Gaspard et al., 2018).

The development of self-concept is influenced by comparison (social, critical, dimensional, and temporal) and by reference group effects (summarized by Möller & Trautwein, 2020). The role of social comparison is empirically well established and there are two main processes that should impact the effect of social

comparison on students' self-concept development: First, the social environment significantly shapes the development of an individual's self-concept by means of direct and indirect feedback (Felson, 1993). This is empirically well established within the context of primary school. Feedback from individuals whose appraisal is perceived as significant, such as parents (Poloczek et al., 2011) or teachers (Spinath, 2004; Ertl et al., 2022) seems of particular importance. However, performance feedback based on formal assessments commonly recognized as a critical and important comparative information fosters an increasingly realistic (and thus lower) self-concept. According to Helmke (1998) this explains why children tend to turn from "optimists into realists" during the first years of primary school (see also Praetorius et al., 2016). Second, social comparisons can also emanate from individuals themselves. In this process students actively compare themselves to other peers, who are subjectively perceived as recognized or well established within the social context. Within school learning, the grade class constitutes one of the main reference groups. Depending on the aggregated achievement level of a specific school class, students of the same achievement level can thus differ regarding the level of their concept (Big-Fish-Little-Pond-Effekt, Köller, 2004, Huguet et al., 2009).

The internal/external frame of reference model (I/E model; Marsh, 1986) and its successor, the 2I/E model (Wolff et al., 2018), describe the development of the academic self-concept. Empirically well supported, it assumes two complementary processes: On the one hand, the individual compares intraindividually distinct dimensions (e.g., mathematics vs. language) or uses temporal information by comparing their own development with their own previous performance. On the other hand, students' self-concept is shaped by interindividual external references based on criteria or social comparison. However, temporal comparisons yield only small effects, whereas dimensional means show medium, and social comparisons yielded the largest effects (Wolff et al., 2018; Wolff et al., 2019). The causal direction of the relationship between academic achievement and (academic) self-concept is not yet fully clarified. Usually, reciprocal effects are assumed (Marsh & O'Mara, 2009).

There are two approaches to explaining the relationship: skill development and self enhancement approach. The skill development approach explains correlations between achievement and self-concept by arguing that performance affects self-concept. By reflecting and classifying one's own performance, the learner recognizes indications for success or failure and draws inferences of this information to form his or her self-concept. The self-enhancement approach pursues the opposite direction. There, either the motivational and reinforcing effects of a positive self-

concept are emphasized more strongly or its negative effects when the expected ability to solve a task is low due to an also low self-concept (e.g., Möller and Trautwein, 2020; Moschner and Dickhäuser, 2018).

Most findings for primary school show that at the beginning (probably also due to the few school experiences), the self-concept tends to influence academic performance initially, but this turns in the further course (e.g., Praetorius et al., 2016; Renner et al., 2011). However, there are also studies that – partly depending on the statistical procedures used – obtain findings which deviate from this (Ehm et al., 2019), accompanied by the stability of the students' academic self-concept. Here, a high stability (especially in comparison to classmates) is evident (summarized: Möller & Trautwein, 2020), although the academic self-concept generally decreases (Sewasew & Schroeders, 2019). In addition, students perceive their own abilities in different domains in an increasingly differentiated way.

Self-Concept in Multi-grade Settings

While the body of research on self-concept and its development is solid and empirically well-founded, it contains only few studies that specifically focus on self-concept (development) in the context of multi-grade settings. Most studies on multi-grade settings typically focus on achievement revealing a general scientific consensus among researchers on the lack of overall achievement differences between mixed- and single-grade classes (e.g., the meta-analyses of Gutiérrez & Slavin, 1992; Russel, Rowe & Hill, 1998, Ronsley-Pavia, Barton & Pendergast, 2019).

In contrast, effects on students' self-concepts can be expected due to the changing frame of reference and comparison in multi-grade classes, where social reference is shaped mainly by 2 reference groups (besides the teacher): on the one hand, peers of the same age, on the other hand, older or younger children (depending on the year of attendance in the mixed year group). Depending on the direction of comparison, these groups provide a child with varying feedbacks regarding their performance (Feinman, Roberts, Hsieh, Sawyer & Swanson, 1992). These social referencing processes or reference group effects (Huber, Gebhardt & Schwab, 2015) could thus result in different effects, depending on the attended grade or school performance for instance.

Regarding self-concept, the available findings indicate rather favorable effects of multi-grade learning. This assumption holds true for at least older meta-analyses ((cf. Ford, 1977; Miller, 1991). Pavan (1992) and Anderson and Pavan (1993) also report high overall student scores and favorable effects on self-concept; a finding confirmed by Jungae Park (1996, unpublished

dissertation, cited in Carle 2019) in her meta-analysis of 98 studies from the "Nongraded Programme". Veenman (1995) confirms this trend in his meta-analysis focusing on self-concept in nine studies (from 1971 to 1985). However, his revision of this meta-analysis (1996, 1997) indicates several differential effects: for example, the advance in positive expression of the self-concept in multi-grade classes could be traced back to factors such as a positive pre-selection of children and teachers, or specific teaching strategies (e.g., like individualized teaching settings). The negative effects reported in one of the studies, on the other hand, could be due to teachers being overwhelmed or unfavorable conditions (for instance the grouping of several grade levels with only one teacher).

More recent studies show rather inconsistent results, mostly reporting neutral, sometimes positive, and rather rarely negative effects (see Pistoli, 2018 for a summary).

Research Questions and Hypotheses

When comparing multi-grade and single-grade classes, differences in the development of students' self-concept can be expected due to the different frames of reference, but also regarding to differential effects depending on the year of schooling in the multi-grade class (tutee vs. tutor) and on achievement. Given the paucity of findings on multi-grade classes in grades 3 and 4, these are important research desiderata.

1) Does self-concept development differ in multi-grade and single-grade classes?

In the multi-grade setting, the frame of reference (Marsh, 1986; Wolff et al., 2018) regarding possible achievement is wider than in the single-grade setting. The extent to which differences in self-concept can be found between mixed- and single-grade classes could depend on the frame of reference students use for their comparisons (Köller, 2004, Huguet et al., 2009). It can be assumed that the students are not exclusively oriented towards children of the same year of school attendance. Therefore, differential effects can be expected for the first and second years of school attendance: In the first year of attendance of multi-grade settings, self-concept could drop, as children also compare themselves with older classmates. In the second year of attendance, it is likely that self-concept scores will recover and thus improve, as at that point social comparison will also take place with the younger children (Wolff et al., 2018; Wolff et al., 2019).

1) Are there differences in the stability of students' self-concept?

In the multi-grade setting, the reference extended by one school year is expected to weaken the self-concept (Sewasew & Schroeders, 2019). Therefore, we expect self-concept scores to be less stable than in single-grade classes (summarized by Möller & Trautwein, 2020).

2) Are there differential effects for children with different learning backgrounds?

Assuming an extended frame of reference (Marsh, 1986; Wolff et al., 2018) in the mixed-year setting, it can be expected that through the direct comparison with students of the higher school attendance year, especially higher-performing students recognize their own weaknesses, which they did not perceive before. This effect is presumably less pronounced for lower-performing students, as they are accustomed to seeing other children perform better.

For the second year of school attendance, a recovery of self-concept is more likely for students of medium and higher performance in the multi-grade setting. For students with low learning performance, it is less clear in which direction the effect spreads: They could either benefit from being the older and thus more competent learning partner or feel threatened with regard to their self-concept. This might happen if they notice – because of the comparisons (Huber, Gebhardt & Schwab, 2015) – how small the gap to the younger students is or that they might even be overtaken by them.

3) Are there differences in students' development if there is a very low self-concept at the beginning of grade 3?

The effect's unclear direction also affects students with extremely low self-concept scores who are taught in multi-grades classes: More flexible and less self-esteem-threatening references between children could foster a positive development of students' self-concept with additional opportunities, especially in the second year. However, the perceived large gap in performance could also stabilize the extremely low level.

Method

Design and Sample

The study involved 1,644 students from 125 classes (68 of which were multi-grade) at 58 elementary schools taught by 125 teachers (91.7 % female; mean seniority MW = 15.8 years, SD = 11.3). The regions were two large cities in southern Germany and the corresponding rural regions of the administrative districts. Recruitment was based on the sample of multi-grade classes. It

was possible to recruit 90% of the multi-grade classes to participate. Reasons for refusal were heterogeneous and unsystematic, therefore a representative sample can be assumed. Representatives of the responsible school supervision and administration were included in the selection of the single-grade classes in order to obtain schools with a comparable district and teachers with a comparable level of competence. A larger control group was intentionally targeted to be able to deal with possible sampling bias by means of suitable matching procedures.

Investigation tools

The study focuses on "reading" as a central aspect of learning in primary education. In addition, reading is present in all lessons, so one can expect multi-grade learning opportunities, whereas children from different years of school attendance might be taught separately in other school subjects.

Self-concept in Reading

The self-concept was conceptualized as a cognitive representation of one's own abilities. Self-concept of reading was chosen because it is likely to be affected by multi-grade teaching. The corresponding questionnaire scale comprised five items (Martschinke & Kammermeyer, 2003), which were elicited in a child-friendly procedure using the four-item Harter scale (Harter, 1990). Trained test administrators were given a standardized instructional guide in advance and practiced the scale format with the children using child-appropriate examples. They read the questionnaire aloud so as not to confound students' response behavior by reading ability. The children took the self-assessments per item in two steps guided by the test administrators: First, the children were asked to make a directional decision and then an expression decision (e.g., Step 1: "Do you find reading easy or difficult?", Step 2: "Do you find reading very easy or only a little easy?" or "Do you find reading very difficult or only a little difficult?").

The students' self-concept in reading was measured three times: the beginning of grade 3 (t_1), the end of grade 3 (t_2), and the end of grade 4 (t_3). Internal consistencies of the scale were adequate at all three time points (Cronbach's alpha, 5 items, $\alpha_1 = .82$, $\alpha_2 = .86$, and $\alpha_3 = .87$).

Performance in Reading

To measure the performance in reading, the same test from the nationwide VERA 2006 school achievement study was used at the beginning of grade 3 and at the end of grade 4 (continuous non-fiction text, closed and open response format, subscales: lower hierarchy and

higher hierarchy comprehension processes, 13 items, Cronbach's $\alpha_{11} = .73$; $\alpha_{13} = .72$). At the end of grade 3, reading performance was measured using a Bavaria-wide comparison test (Lankes, Rieger & Pook, 2015).

Covariates

All covariates were assessed at the beginning of grade 3 via questionnaires using individual items (e.g., gender, number of books in the household for educational background, parental or family language as the main language/ first language of communication between the respective family members) or corresponding scales. Each of these showed good reliabilities (attitude toward classmates and school, 8 items, $\alpha_{11} = .82$; self-concept in mathematics, 10 items, $\alpha_{12} = .87$) (see Martschinke & Kammermeyer, 2003 for the individual scales). Motivation, with the motivation styles intrinsic, identified, introjected, and external – which were also surveyed in the Self-Regulation-Questionnaire (Ryan & Connell, 1989) – was assessed with the help of a dominance-pair comparison (cf. Hartinger et al., 2004). For this purpose, two items were formulated for each of these four motivational styles, resulting in a total of twelve pairwise comparisons (e.g., In class I cooperate a) because I would be ashamed if I did badly or b) because school is very important). Children then had to choose one of the two options. As a measure of the consistency of such pairwise comparisons, Bortz, Lienert, and Böhnke (2008, pp. 489ff.) suggest calculating a characteristic value based on the inconsistent triads which should be avoided. In this case none of the dominance pairwise comparisons has inconsistent triads, hence the dominance pairwise comparisons can be regarded as reliable.

Data Processing and Analysis

Missing values for one or more variables, the proportion of which was 14.7% or less, were estimated for each time point using the Expectation Maximization-algorithm (Enders, 2010, Madley-Dowd et al., 2019). The missing values of the students were first estimated for each time point individually, then across the different time points, if a minimum of 70% of all variables was available for this purpose.

To statistically control for as many covariates as possible, a 1:1 propensity score matching procedure was then conducted using a nearest neighbor-algorithm (Guo & Fraser, 2015). For this purpose, a logistic regression model with the dichotomous criterion single- or multi-grade was estimated, into which various characteristics such as gender, educational background, parental language, family language, and motivational aspects entered as independent variables (McFadden's Pseudo $R^2 = .01$; cf. for details Munser-Kiefer et al., 2021). As a result, the small

differences from a priori between the control and experimental groups with respect to the covariates could be almost completely compensated (mean absolute standardized difference in the matched sample .01) and each child in a multi-grade class ($n_{mg} = 663$) could be assigned exactly one other child with similar characteristics in the single-grade group.

To be able to compare the differing raw score scales of the reading tests used at the three different time points, they were z-standardized after the matching procedure. The following analyses and tables (e.g., Table 1) refer to these z-scores, which also form the basis for the division into four performance quartiles in reading at the beginning of grade 3 to examine research question 3 (Table 4).

Determining developmental trajectories and differences in self-concept between single- and multi-grade groups overall (cf. Tables 1 and 3) as well as for the four performance-based quartiles (Tables 4 and 5) at the three time points, linear mixed models are estimated. These consider the longitudinal data structure (cf. the intraclass correlations [ICC] in Tables 3 and 5) and have further methodological advantages with regard to analysis requirements, power, or the handling of missing values (cf. for details Hilbert et al., 2019). The predictors group (single-grade vs. multi-grade) and time (beginning or end of grade 3, end of grade 4, respectively) are dummy-coded (0/1), with single-grade and end of grade 3 being the reference categories. This is advantageous because in a single model (i.e., without alpha error accumulation) effects between two the groups as well as between the time points can be estimated directly in pairs. The respective interaction effects (group \times beginning of grade 3 or group \times end of grade 4) are of particular interest, as these express the additional change in self-concept in the multi-grade group (considering the change in the single-grade group).

The analysis requirements (e.g., normal distribution) were checked graphically and by inferential statistics and do not limit the interpretability of the results. All further analyses were performed with the statistical software R (R CoreTeam, 2021) and using the following packages: MatchIt (Ho et al., 2011), ggplot2 (Wickham, 2016), multilevel (Bliese & Bliese, 2016), lme4 (Bates et al., 2014), lmerTest (Kuznetsova et al., 2017), and MuMIn (Barton, 2020).

Results

Overall effects of multi-grade teaching on self-concept in reading

A first overview on the development of the reading self-concept in grades 3 and 4 is given in Figure 1 and Table

1, which also shows the corresponding means of the reading performance for comparison purposes (for an analysis of the performance development in reading Munser-Kiefer et al., 2021). Given the underlying four-point rating scale (0 = strongly disagree, 3 = strongly agree), students in both groups show relatively high self-concept on average at all three time points. The distributions are also comparable in both groups at each time point, as corresponding Levene tests show ($F_{\text{beg3}}(1, 1324) = 2.58, p_{\text{beg3}} = .11; F_{\text{end3}}(1, 1324) = 0.33, p_{\text{end3}} = .57; F_{\text{end4}}(1, 1324) = 1.13, p_{\text{end4}} = .14$).

Looking at the developmental course, the values are on average the lowest at the end of grade 3 (cf. Fig. 1 and Tab. 1#). This effect is mainly due to the multi-grade classes: While multi-grade and single-grade classes show almost the same means in self-concept

at the beginning of grade 3 due to the matching procedure, there is a descriptive difference to the disadvantage of multi-grade classes at the end of grade 3 ($d_{\text{sg-mg}} = -0.11$). However, this reverses in favor of multi-grade classes at the end of grade 4 ($d_{\text{sg-mg}} = 0.10$).

The descriptive evidence that classroom organization has an impact on the development of self-concept can be concretized using mixed linear models with the dependent variable self-concept and dummy-coded predictors, with end of grade 3 and single-grade groups as reference categories (see Table 2). Again, we find that the decline in self-concept is somewhat larger in multi-grade classes during grade 3 and increases (compared to single-grade classes) in grade 4, as suggested by the corresponding significant interaction effect "MG x end of grade 4" in Table 2.

Table 1

Self-concept and performance (z-standardized) in reading at three time points (N = 1326)

M (SD)	Beginning of grade 3			End of grade 3			End of grade 4		
Self-concept	2.39 (0.51)			2.33 (0.55)			2.40 (0.53)		
Performance	0.00 (1.00)			0.00 (1.00)			0.00 (1.00)		
M (SD)	SG	MG	$d_{\text{SG-MG}}$ [95 % CI]	SG	MG	$d_{\text{SG-MG}}$ [95 % CI]	SG	MG	$d_{\text{SG-MG}}$ [95 % CI]
Self-concept	2.40 (0.52)	2.38 (0.50)	-0.04 [-0.14; 0.07]	2.36 (0.55)	2.30 (0.56)	-0.11 [-0.21; 0.01]	2.37 (0.54)	2.42 (0.52)	0.10 [-0.01; 0.21]
Performance	0.00 (1.01)	0.00 (0.99)	0.00 [-0.10; 0.11]	-0.13 (1.10)	0.13 (0.87)	0.26 [0.15; 0.37]	0.02 (1.01)	-0.02 (0.97)	-0.03 [-0.14; 0.08]

N sample size; SG single-grade, MG multi-grade; M mean; SD standard deviation; dSG-MG effect size Cohen's d (according to Cohen, 1992: 0.2 small, 0.5 medium, 0.8 large), CI confidence interval

Table 2

Linear mixed regression model for self-concept in reading using the matched total sample (N = 1326) and considering the longitudinal data structure nested by classes and participants (ICC = 63.9%)

Fixed Effects	b	SE	df	t	p
Intercept	2.36	.02	165.40	107.68	<.01
Multi-grade (MG)	-.06	.03	190.69	-1.91	.06
Beginning of grade 3	.04	.02	2648.00	2.52	.01
End of grade 4	.01	.02	2648.00	0.72	.47
MG x Beg. grade 3	.04	.02	2648.00	1.67	.10
MG x End grade 4	.11	.02	2648.00	4.55	<.01
marg. R ² cond. R ²		.01			.65

N sample size; ICC intraclass correlation; b (unstandardized) regression coefficient; SE standard error, df degrees of freedom; t t-value; p probability of committing a type I error; p ≤ .05 significant, (marg./cond.) R² (marginal/conditional) coefficient of determination. All predictors included are dummy-coded (0/1). Since the time point at end of grade 3 is the temporal reference category, the regression weights concerning the beginning of grade 3 are to be inverted in the interpretation logic.

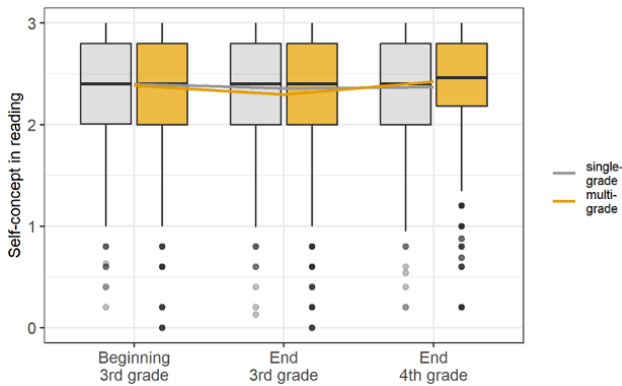
Table 3

Pearson's product-moment correlations between self-concept and performance in reading at three time points (N = 1326)

	Total			Single-grade vs. multi-grade				
	Beg. of grade 3	End of grade 3	Beg. of grade 3	Self-concept		Performance		
				End of grade 3	End of grade 4	Beg. of grade 3	End of grade 3	End of grade 4
Self-concept Beg. grade 3				.59	.58	.41	.33	.33
End grade 3	.63		.67		.75	.41	.38	.35
End grade 4	.57	.73	.57	.71		.43	.37	.44
Performance Beg. grade 3			.33	.44	.49		.54	.51
End grade 3	.43		.28	.42	.48	.36		.42
End grade 4	.55	.39	.24	.33	.40	.59	.39	

Above the diagonal multi-grade (grey), below single-grade; for all correlations $r_{ij} p \leq .01$.

Figure 1
Development of self-concept in reading from the beginning of grade 3 to the end of grade 4



Differences in stability of students' self-concept

These observations already provide evidence for stability of the self-concept in reading across the two school years. This is further emphasized by the high correlations between self-concept at the beginning and end of grades 3 and 4 ($r_{\text{beg}3/\text{end}3} = .63$; $r_{\text{end}3/\text{end}4} = .73$; $r_{\text{beg}3/\text{end}4} = .57$). Their contribution even exceeds the corresponding correlation values of reading performance, which are also recorded in Table 3 for comparison purposes. Moreover, a more detailed analysis of Table 3 reveals that the correlation of self-concept (as well as performance) between the beginning and end of grade 3 – but not between other time points – is significantly lower in the multi-grade

Table 4
Self-concept in reading stratified by performance quartiles at three time points

M (SD)	Beginning of grade 3			End of grade 3			End of grade 4		
	SG	MG	$d_{\text{SG-MG}}$ 95 % CI	SG	MG	$d_{\text{SG-MG}}$ 95 % CI	SG	MG	$d_{\text{SG-MG}}$ 95 % CI
1st quartile	2.11 (0.58)	2.19 (0.54)	0.13 [-0.08; 0.34]	2.05 (0.57)	1.97 (0.62)	-0.15 [-0.36; 0.06]	2.07 (0.57)	2.09 (0.60)	0.04 [-0.17; 0.25]
2nd quartile	2.34 (0.52)	2.30 (0.50)	-0.07 [-0.29; 0.15]	2.27 (0.54)	2.24 (0.48)	-0.06 [-0.28; 0.16]	2.28 (0.48)	2.32 (0.46)	0.09 [-0.13; 0.31]
3rd quartile	2.55 (0.41)	2.45 (0.43)	-0.24 [-0.45; -0.02]	2.51 (0.48)	2.38 (0.50)	-0.26 [-0.48; -0.04]	2.48 (0.49)	2.53 (0.44)	0.10 [-0.11; 0.32]
4th quartile	2.62 (0.40)	2.62 (0.41)	-0.02 [-0.23; 0.20]	2.61 (0.43)	2.63 (0.37)	0.06 [-0.16; 0.28]	2.66 (0.38)	2.77 (0.26)	0.35 [0.12; 0.57]

N sample size; SG single-grade, MG multi-grade; M mean; SD standard deviation; $d_{\text{SG-MG}}$ effect size Cohen's d (according to Cohen, 1992: 0.2 small, 0.5 medium, 0.8 large), CI confidence interval; stratification: 1st quartile group of students with the lowest reading performance, 4th quartile group of students with the highest reading performance

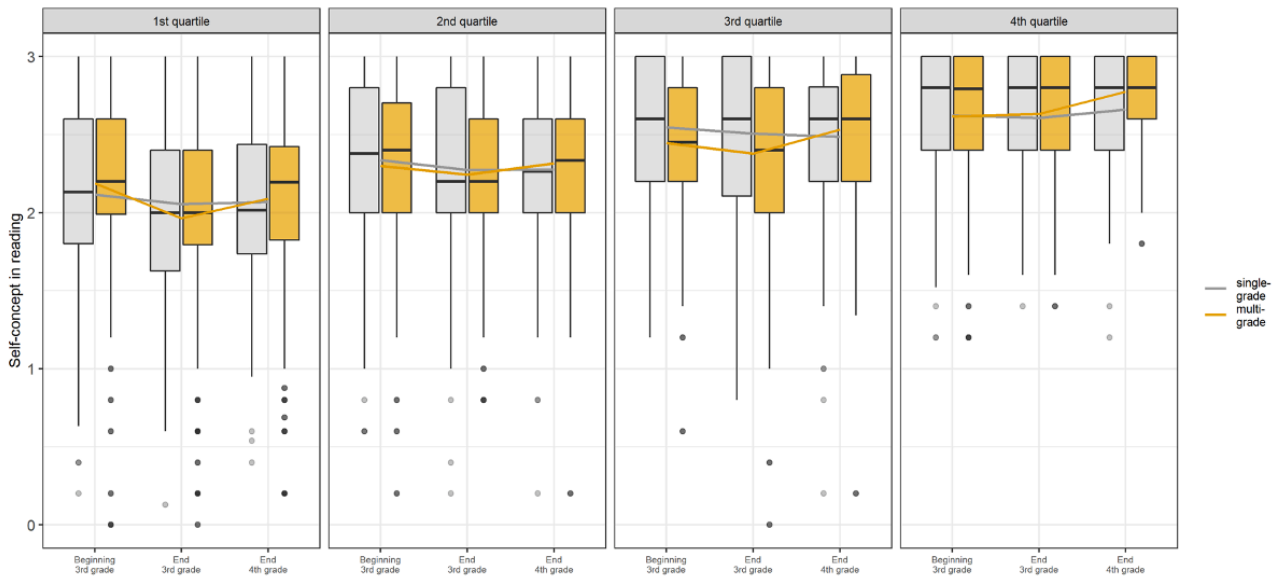
Table 5
Linear mixed regression model for self-concept in reading using the matched sample stratified by performance quartiles and considering the longitudinal data structure nested by classes and participants

N obs. ICC	1st quartile					2nd quartile					3rd quartile					4th quartile									
	b	SE	df	t	p	b	SE	df	t	p	b	SE	df	t	p	b	SE	df	t	p					
Fixed effects																									
Intercept	2.05	.04	561.18	46.72	<.01	2.27	.04	602.84	58.17	<.01	2.51	.04	635.95	67.13	<.01	2.61	.03	590.36	90.71	<.01					
Multi-grade (MG)	-.09	.06	561.18	-1.42	.15	-.03	.06	602.84	-.57	.57	-.13	.05	635.95	-2.53	.01	-.02	.04	590.36	-.59	.56					
Beginning of grade 3	.06	.04	680.00	1.62	.11	.06	.04	640.00	1.64	.10	.04	.04	670.00	1.14	.25	.01	.03	646.00	.52	.60					
End of grade 4	.01	.04	680.00	.36	.72	.00	.04	640.00	.03	.98	-.02	.04	670.00	-.61	.55	.05	.03	646.00	1.95	.05					
MG x Beg. grade 3	.16	.05	680.00	3.03	<.01	-.01	.05	640.00	-.10	.92	.03	.05	670.00	.57	.57	-.03	.04	646.00	-.79	.43					
MG x End grade 4	.11	.05	680.00	2.08	.04	.07	.05	640.00	1.37	.17	.18	.05	670.00	3.64	<.01	.09	.04	646.00	2.26	.02					
marg. R ² cond. R ²			.01		.64			.00		.55			.02		.55			.02		.58					

N sample size; obs. observations; ICC intraclass correlation; b (unstandardized) regression coefficient; SE standard error, df degrees of freedom; t t-value; p probability of committing a type I error; p ≤ .05 significant, (marg./cond.) R² (marginal/conditional) coefficient of determination. All predictors included are dummy-coded (0/1). Since the time point at end of grade 3 is the temporal reference category, the regression weights concerning the beginning of grade 3 are to be inverted in the interpretation logic; stratification: 1st quartile group of students with the lowest reading performance, 4th quartile group of students with the highest reading performance

Figure 2:

Development of self-concept in reading from the beginning of grade 3 to the end of grade 4 (separated by performance quartiles)



classes than in the single-grade classes ($r_{mg,beg3,end3} = .59$, $r_{sg,beg3,end3} = .67$; $z = 2.42$, $p = .02$). With comparable baseline variance in both groups (cf. Section 5.1), this suggests greater changes in self-concept during grade 3 multi-grade classes and is supported by the greater variance in change in self-concept between the beginning and end of grade 3 compared to the single-grade setting. This difference in variance between the two types of organization was tested and confirmed using Levene's test of difference scores in self-concept at the end and beginning of grade 3 ($F_{sg,mg,end3-beg3}(1, 1324) = 6.13$, $p = .01$). In contrast, a corresponding analysis of the difference scores between the of grade 4 and grade 3 yields no significant result ($F_{sg-mg,end4-end3}(1, 1324) = 0.28$, $p = .59$). Thus, self-concept proves to be less stable in the multi-grade setting in grade 3 than in the single-grade setting, while a comparable weakening cannot be found in grade 4.

Differential effects in children with different learning prerequisites

Above, we have reported on the comparatively strong decrease of the self-concept in multi-grade classes in the course of grade 3 and, in turn, the increase in grade 4. The question now arises as to whether these effects are consistent or can be attributed to children with specific learning prerequisites. If we look at the descriptive data (Table 4) and the findings of the linear mixed models (Table 5), we see that there are definitely differences: Compared to single-grade classes, the self-concept decreases in the course of grade 3, especially in the group with the lowest reading performance. This effect is significant, as underlined by the interaction term "MG x beginning grade 3" of the associated mixed linear model in Table 5. None of the other performance groups shows a

comparable effect.

At the end of grade 4, the multi-grade classes have in all quartiles on average a noticeably more positive self-concept than the single-grade classes. The higher the performance of the quartile in question, the greater the effects. The changes over the school year are also more positive in the multi-grade classes than in the single-grade classes in all quartiles. They become significant for the first, third and fourth quartile (cf. Table 5 with the respective interaction effects "MG x end of 4th year"). The development is additionally illustrated in Figure 2.

Differences in development of children with very low self-concept at the beginning of grade 3

This question takes on additional relevance because it has just been shown that during grade 3 the self-concept of the children with the lowest learning performance drops particularly sharply.

As a very low self-concept, we define values which are more than three standard deviations below the mean value at the respective time of observation. This category thus includes self-concept means that are less than 0.86 at the beginning of grade 3, less than 0.66 at its end, and less than 0.81 at the end of grade 4. Respectively, this is true for 20, 17, and 18 students. The distribution between the single- and multi-grade group is presented in Table 6.

As can be seen in Table 6, at the beginning of grade 3 and at the end of grade 4, about the same number of students in multi-grade and single-grade classes, respectively, have a very low self-concept. By the end of grade 3, there are almost twice as many children

with very low self-concept in the multi-grade classes. This is consistent with the findings above. At the end of grade 4, the distribution is more balanced again.

Table 6

Distribution of very low self-concept in reading in single- and multi-grade setting

Beginning of grade 3		End of grade 3		End of grade 4							
SG	MG	SG	MG	SG	MG						
N	M (SD)	N	M (SD)	N	M (SD)						
11	0.60 (0.20)	9	0.42 (0.32)	6	0.42 (0.21)	11	0.35 (0.24)	8	0.54 (0.26)	10	0.45 (0.27)

SG single-grade, MG multi-grade; N sample size; M mean; SD standard deviation

However, it should also be noted that this group consists of only 7 (4 multi-grade, 3 single-grade) out of the 20 respective children at the beginning and end of grade 3. Only one child (multi-grade) shows a very low self-concept at all three time points.

Summary and Discussion

This paper reports the results of a representative longitudinal study on multi-grade learning in grade 3 and grade 4 with respect to the development of children's self-concept regarding their reading skills. We investigate the question of (differential) differences compared to learning in single-grade classes.

Our data confirm the assumption that at the end of grade 3, self-concept is lower in multi-grade classes than in single-grade classes. At the same time, in these classes the students' self-concept is less stable. Both findings indirectly confirm the assumption that students compare their performance to the entire learning group (in this case extended by one grade).

From this perspective, the findings for grade 4 are consistent: Here, the self-concept of the multi-grade students once more aligns itself to and even tends to be slightly higher than the self-concept of students in single-grade settings. Since the children now belong to the older group, there is a new reference group showing lower learning performance on average. As expected, the more proficient the children are in reading, the more they benefit.

Regarding possible differential effects, our hypotheses were not consistently confirmed: The effect just described concerning grade 3 can mainly be ascribed to the children with low reading performances (at the beginning of the grade 3), and not - as assumed - to students with good and average reading performances. The latter apparently perceive the comparison with older children to be less stressful.

For this reason, it is pedagogically significant that even in the group of children with low reading performances in multi-grade classes, self-concept

increases again significantly in the course of the grade 4. One reason for this could be the fact that especially for those children, switching to the role of the older students (and often tutors) could be especially self-concept enhancing.

Similar effects were found for all performance groups. Again, this can be explained by the extended frame of reference (in this case downwards) within which students compare and classify themselves.

Students with a very low self-concept were found in both settings (multi- and single-grade classes) - the number of children affected, however, is not very high (single-grade: 6-11 and multi-grade: 9-11 of N = 1326). It is striking that there is a roughly consistent number of students with very low self-concept across all times of measurement, however, with one exception as these are not the same students. Overall, the number of students with a very low self-concept indicates that neither form of classroom setting poses an increased risk.

What matches the findings of the other analyses is that multi-grade classes, however, tend to pose a higher risk of weakening students' self-concept - especially in the grade 3, when the comparison with the older children takes place. Our findings thus indirectly confirm that social comparison is highly significant even in multi-grade classes.

In summary, multi-grade settings probably weaken their students' self-concept. However, this is balanced again by the end of grade 4 across all subgroups of reading performance.

This allows for the cautious statement that multi-grade classes, when thought of as a rotation (beginning of grade 3 until end of grade 4), do not have more negative effects on self-concept development than single-grade classes. In fact, multi-grade classes even become an opportunity for a more favorable development - depending on students' performance.

From our findings, indications can be deduced on how to mitigate the less favorable development in the first year of attendance in multi-grade classes as well as on how the favorable effects in the second year of attendance can be supported: For example, students in their first year of attendance could be supported by a corrective based on a relativizing criterion referenced standard as well as by the use of a self-referenced standard with clear, yet still individually set goals.

This could, in addition to the broadened information spectrum induced by social comparison with older students, generate a self-concept protecting effect: first by perceiving a more manageable learning growth (Wigfield & Cambria, 2010) and, second by

perceiving one's own learning growth. Non-public feedback (Dresel et al., 2017) and allocating various tasks to choose from in accordance with one's learning needs could provide additional support and help decouple from social comparison (Martschinke & Kammermeyer, 2003).

Furthermore, the composition of student groups within multi-grade classes is relevant as a reference: Here, a medial difference in achievement could prove to be self-concept supportive. The students in the multi-grade setting would thus have the advantage of developing a more realistic perception of potential and individual goals while at the same time obtaining more favorable motivational effects on their self-concept.

Limitations and Reflections

The study reports effects of multi-grade classes from Germany. Due to the school administration's data protection regulations, it was not feasible to randomize the sampling of classes and students to an experimental design. This was countered by a nearly comprehensive inclusion of multi-year classes from different regions; the single-grade classes of the comparison group were selected according to theoretical criteria. From a methodological point of view, the applied propensity-score matching procedure (see section #) is an appropriate way to control a certain number of covariates (Kuss et al., 2016), even if only actually measured characteristics can be included in the adjustment. This must be considered for all (causal) assumptions and further conclusions.

As the study is restricted to Germany, the teaching (setting) of multi-grade classes is very likely to be more similar within the sample than in the international total population of multi-grade classes. Nevertheless, there are certainly also differences in teaching design and instructional quality, here as well as internationally (Ronksley-Pavio et al., 2019). In our paper, we do not take these differences into account, so we cannot rule out the possibility of rather favorable and rather unfavorable forms of teaching combined into a mean value which may weaken the effects. Since effects on students originate less from overservable structures of learning (e.g., classroom organization as open and guided teaching, multi-grade and mono-grade teaching) than from structures on process level (e.g., cognitive activation, socio-emotional support) (Hahn, 2019), this is a limiting factor. Therefore, further analyses should include the way multi-grade teaching is implemented in the classroom to be able to describe the effects of grade-mixing more comprehensively. In this way, (un)favorable forms of multi-grade teaching can be identified and used for pre-service teacher training and teacher professionalization.

Furthermore, the reported findings on self-concept refer to the cognitive representation of one's own abilities in the field of reading. Thus, the verbal self-concept is narrowed down to a subject-specific facet. This could be extended to the entire spectrum of the verbal self-concept respectively supplemented by facets of self-concept concerning maths and science, which would allow an additional analysis of dimensional effects. In this case and in general, an analysis could be conducted with respect to broader differential effects (such as gender, first language, or socio-economic status), which could complement the data of Quail and Smyth (2014). Additionally, future studies and analyses should consider emotional-affective facets of self-concept, which had also been excluded in this study, as an important elements of personality development.

In order not to overwhelm the children, the self-concept was measured with a short scale (5 items), which describes the underlying construct in a valid manner, but certainly not exhaustively. In addition, the degree of differentiation of the four-item Harter scale (Harter, 1990) is limited, which from the beginning leads to ceiling effects, especially for individuals in the higher ranges of performance. Thus, changes or even larger differences in self-concept between mixed- and single-grade classes may be underestimated or not detected at all (cf. Fig. 2, especially 4th quartile). However, the use of the Harter scale has proven to be successful especially at primary school level, as it is a linguistically and methodologically adapted and simplified procedure for self-assessment of abilities suitable for children (Harter, 1990, Martschinke & Kammermeyer, 2006).

Furthermore, it must be taken into account that at the three survey time points different instruments were used to assess reading performance with different difficulty parameters as well as raw and total scores. This was necessary, on the one hand, with regard to the curricular validity of the tests, and on the other hand to avoid floor or ceiling effects. However, due to the resulting z-transformation, statements can only be made in relation to the total sampling.

Moreover, the consideration of quartiles, which were formed according to the reading performances at the first time of measurement, is ultimately based on pragmatical reasons (e.g. sufficient number of cases per quartile), forms of reading instruction (e.g. clear presentability), and content-related reasons (analysis of the development of low, below-average, above-average, and highest initial performances). In addition, other distributions would also be possible (e.g. terciles); this would lead to comparable results.

Further analyses of the data from our longitudinal study of multi-grade learning in grades 3 and 4 will focus, among other things, on the design of multi-

grade teaching (e.g., with respect to reference norm orientation, to amount of multi-grade learning, and to adaptivity) and its effects on performance, motivation, and attitudes. A special focus will continue to be on differential effects (e.g., students' learning requirements or pre-qualifications, students' length of in multi-grade classes, gender). On the one hand, this will provide information on both opportunities and limitations of multi-grade learning, and on the other hand, it also provides information on how to appropriately design and set this form of classroom setting. Additionally, the children's different learning pre-qualifications and learning needs are emphasized - a fact that is of particular importance in multi-grade learning due to the two grades being taught at the same time.

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The Agenda of The Reading Teacher Journal on Reading and Reading Skills: A Corpus Analysis in the Last Decade

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Abstract

Reading is one of the main skills to be learned and used in schools and through the entire life of an individual. Its crucial importance made reading one of the central topics in different academic disciplines such as education, psychology, linguistic and neuroscience. Advances in multidisciplinary approaches to and studies of reading gave us the reason to talk about the science of reading. Improvement in research into reading during the last century reveals the fact that different approaches emphasized the importance of partially different aspects of reading skills. Different approaches presented sound arguments for different priorities in teaching and learning of reading. For some decades ago strong dichotomic arguments were so sharp that in the United States the reading literature talked about 'the reading wars'. During the recent decades, the debate of reading and approaches to reading, reading skills and reading processes have changed. Studies of reading presented different arguments for partially different priorities. The Reading Teacher (RT) has for many decades been the one of the most important arenas for the presentation of new findings, ideas, arguments, and trends. Our present corpus-based study captured the frequent collocations and their usage in the RT publications – 952 articles comprising 3 548 008 words - during the last decade, 2012-2021. TreeTagger was used for part-of-speech tagging and CQPWeb/CWB framework was employed as the corpus interface in the analysis process. The findings clearly revealed that "reading comprehension" was the most frequently used collocation, and it has never weakened its position in the RT publications in the last decade. While instructional activities and processes like 'shared reading', 'during reading', 'while reading', and 'after reading' were given considerable attention, 'before reading' was almost forgotten. Findings also show that linguistic diversity among students, particularly in the US, also made an impact on the emerging of new topics and thus frequency of concepts like bilingual, multilingual, translanguaging, and coaching. Findings related to the ascending and descending trends reading collocations in RT publications regarding other aspects of reading, teaching of reading, and reading processes are discussed and some ideas for future research are presented.

Keywords:

Reading, Collocations, Corpus, Reading Comprehension



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Introduction

Reading is critical for children's success in school and social life. Therefore, the science of reading aims to explain the process of teaching and learning reading to educators, families, and students. This helps them to gain a deeper understanding of this vital skill. This research study can be considered as a new step towards understanding the reading skill. It is a result of a corpus-based analysis of the studies on reading and teaching reading published in the Reading Teachers (RT) in the last ten years, 2011-2021.

Reading skill has been the subject of research for those working in the fields of education, linguistic, cognitive science and cognitive neuroscience for years. While researchers working in the field of education and language focus on the applications of reading in the classroom and teaching methods, cognitive science and cognitive neuroscience focus on the cognitive processes of this skill and the functions of the brain during reading. According to the results of these studies, Seidenberg (2013) emphasizes that the reading-based functions of the brain and the mechanisms underlying students' basic reading skills can be explained with neuroimaging and computational models.

When it comes to the approaches to reading, one can find many similarities but also some differences. According to Anderson, Hiebert, Scott and Wilkinson (1985) "Reading is the process of constructing meaning from written texts. It is a complex skill requiring the coordination of a number of interrelated sources of information." (p. 7). The researchers emphasize the complexity of reading and the need to coordinate various sources of information. In another approach to reading Wixson, Peters, Weber and Roeber (1987) consider it as

"the process of constructing meaning through the dynamic interaction among: the reader's existing knowledge; the information suggested by the text being read; and the context of the reading situation." (p. 750).

Here one can see that the researchers emphasize the dynamic interaction between the reader's knowledge, the text being read, and the reading context.

Another approach to reading by Torgesen, Houston, Rissman and Kosanovich, (2007) is more result-oriented compared to the previous approaches.

The researchers take into account the competencies that students should acquire at the end of primary school and state the following: "...students be able to identify the words on the page accurately and fluently; that they have enough knowledge and thinking ability to understand the words, sentences, and paragraphs; and that they be motivated and

engaged enough to use their knowledge and thinking ability to understand and learn from the text." (p. 1).

They also stress the importance of accurate word recognition, thinking ability, motivation, and engagement in reading proficiency, as well as "knowledge". This last point as 'content knowledge' was given even more attention and seen as an important factor for reading in general and reading comprehension in particular by the American National Governors Association (2013) when they discuss the prerequisites for reading: "Reading proficiency requires three sets of interrelated skills that develop over time: language and communication, mechanics of reading, and content knowledge." (NGACBP, 2013 p. 3). Here they also identify 'language and communication' and 'mechanics of reading' along with content knowledge as important factors for reading proficiency.

Although these approaches to some extent emphasize different aspects of reading proficiency and the skills it encompasses, it is possible to say that they have similarities in some basic points; a) All of the statements acknowledge that reading involves the construction of meaning from written texts. b) They all recognize that reading proficiency requires a combination of skills and abilities. c) They all emphasize the importance of the reader's existing knowledge and engagement in the reading process.

Considering the components that the above mentioned approaches include regarding the reading skill, it can be said that it is a multidimensional and complex developmental process. Several researchers (Kendeou, van den Broek, White, & Lynch, 2009; Grabe, 2009) describe this process in two stages: One is lower-level processes, including word recognition, syntactic parsing, and meaning encoding, and the other is higher-level, including text model formation, situation-model building, inferencing, executive-control and strategic processing. It seems that the acquisition and development of reading skills is a gradual process that starts with the letter-sound relationship and leads to capturing and interpreting the meaning in the text.

The Focus of RT: evidence-based literacy instruction

RT is a respected journal in its field with its theoretical and applied studies on reading and teaching reading. The journal is published biannually by Wiley-Blackwell on behalf of the International Literacy Association (ILA, 2023). RT has a publishing policy that covers a wide range of topics related to literacy. Within the framework of this policy, publications are made in the form of theoretical and practical research, book reviews and sample applications. With these publications, the journal can be described as the

meeting point of teachers, researchers, policy makers and educators interested in literacy skills.

RT is a peer-reviewed journal. It publishes research-based best practices for literacy studies. The journal has a wide readership such as classroom teachers, literacy coaches, reading specialists, researchers, and teacher educators. The journal is also indexed in various academic databases and indexes such as Web of Science, Social Sciences Citation Index (Clarivate Analytics), SCOPUS (Elsevier), ERIC, ProQuest Professional Education and Academic Search Complete (EBSCO). It is true to claim that unlike several other academic journals, RT presents theoretical and methodological approaches to reading and teaching reading. In addition, RT publications have teaching and learning of reading its main area of focus. These qualities made RT as a journal of cutting-edge studies of reading and a respected voice of science of reading.

Previous studies on RT

The first one of the earlier studies of the focus of RT (Staiger, et al., 1992), with regard to reading, concluded that the articles in the journal from 1950 thru 1954 did the following: 1) They informed classroom teachers about current research and promising projects on teaching reading, 2) They provided practical information on classroom activities and reading materials for teachers and students, and 3) They provided information about the International Council for the Improvement of Reading Instruction and its local councils.

In the other five studies, researchers (Jerrols, 1992; Stahl & Fisher, 1992; Pearson, 1992; Dillon, et al., 1992 and Mohr, et al., 2017) analysed the articles in RT which were the milestones for trend topics and the journal through content analysis. For instance, Jerrols (1992) determined the topics as milestones in teaching reading from 1947 to 1991. Among these topics, elementary reading, secondary reading, suggestions for teachers, classroom reading teacher, reading comprehension, modern instructional techniques, parent-teacher cooperation, literacy-related drawings created by children, and reading educators were mentioned. One of the most striking points in this study was that RT published articles from countries such as Finland, then Russia, Bulgaria, Ukraine, Mexico and China after 1982.

Stahl and Fisher (1992) examined the first 20 years of RT and emphasized that the following four different reading related pedagogical issues were the major themes: a) Reading readiness, b) Word recognition, c) Reading comprehension, and d) Reading disabilities.

In the study conducted by Pearson (1992), the issues of RT between 1968-1990 were included. It was found that 22 different topics were addressed. Among these topics, the most recurring were the following:

a) Integrated language arts, b) Children's literature, c) Comprehension, d) Language and cultural influences, and e) Testing/assessment and administering reading programs.

Dillon, et al. (1992), on the other hand, identified the following most frequent article topics by quantitative analysis of 2,168 articles in RT between the years 1948-1991: a) Instructional strategies, b) Assessment, c) Children's literature, d) Emergent literacy/reading readiness, e) Attitudes/habits/interests, and f) Cross-cultural and reading problems

In a recent study, Mohr et al. (2017) examined the articles in RT published between 1992-2016 and found the following most frequently used concepts: a) Instructional, b) Children's literature, c) Writing, d) Attitudes/habits/interests, e) Comprehension, f) Teacher education, g) Assessment, h) Content reading, and i) Technology, and cross-cultural.

These findings, generally obtained by using keywords, are very important in terms of analysing the content of RT. However, there is another option through which RT as a journal of an outstanding role in the field of reading can be analysed. In our view a corpus-based study.

The aim of the present study

The aim of this corpus-based study is to add some valuable ideas and perspectives to the existing literature and expand our knowledge base. Through conducting a corpus-based study on the millions of words used in 952 articles published in RT during the period of from 2012 thru 2021, we identified the words which the concept of reading often form collocation with. By doing so, we aimed to answer the following research questions:

1. What are the most frequently used concepts in the RT Corpus?
2. What concepts frequently form collocations with "reading" in the RT Corpus? What is the distribution of these collocations by year?
3. What are the adjectives that form collocations with "reading" in the RT Corpus? What is the distribution of these collocations by year?
4. What are the verbs that form collocations with "reading" in the RT Corpus? What is the distribution of these collocations by year?
5. What are the major concepts in the first five and last five years of the RT Corpus?

We hope that the findings of our study will expand our knowledge about the advances in reading research and the current areas of focus in the science of reading.

Methodology

Corpus linguistics is primarily a quantitative approach, relying on numerical data representing words and phrases within corpora (McEnery & Hardie, 2011). Therefore, statistics plays a vital role in corpus linguistics by facilitating the effective processing and analysis of quantitative information (Brezina, 2018).

Corpora are the tools used for linguistic analysis of datasets, providing qualitative and quantitative data about a particular language. Corpus has been defined in the literature by considering its different characteristics. Sinclair (1991) defines a corpus as "a collection of texts selected and assembled according to certain linguistic criteria that can be used as examples of language", while Leech (1992) describes it as "a large amount of data collected in a digital environment (computer)". McEnery and Wilson (2001) define corpus as "a collection of texts carefully selected to represent a language", while Tognini-Bonelli (2001) defines it as "a collection of texts put together for linguistic analysis, supposedly capable of representing a language."

These conceptions of corpus emphasize three key elements of corpus features: a) They are "structured", b) They "consist of large amounts of data" and c) They are "computer-readable".

Thus, it is reasonable to consider a corpus as "a collection of large volumes of digitized language data brought together for a specific purpose." Studies using corpus provide information about the structure of the language, its use, finding and observing various patterns, the change and features of the language.

Corpus linguistics is a discipline that encompasses the preparation processes of corpora and studies using them. "Brown Corpus" (Kucera & Francis, 1967) is accepted as the first corpus prepared on digital platforms. With the increase in data processing and storage capacities, especially after the 1990s, large corpora such as British National Corpus (BNC) (2023), Corpus of Contemporary American English (2023) and Bank of English (2005) were prepared and corpus linguistics has become an accepted discipline. Corpora are also defined according to the "data" they contain. The ones that attempt to present a general profile of a language are referred to as "reference corpora", while the corpora prepared based on a specific topic or a particular type of text or source are called "specialized corpora". The corpus prepared within the scope of this study and serving as the main source of it is also a specialized corpus.

RT Corpus

The corpus for this study was created by including all the studies published online versions of the RT in the last decade (2012-2021). The main reason for taking the last ten years as a reference is that the content analysis of the journal was made with keywords until 2016 and the last five years were not resolved. Considering that the number of words used in the first five years would not be sufficient for a corpus analysis, the second fifth year backwards was also included in the study.

Online publications of RT in the last decade were recorded based on the year, volume and issue. The data were then transformed into raw text. Figures, tables, graphic information, and footnotes were excluded from the data. Each text was annotated with "year, issue, volume, keyword 1 and keyword 2" tags.

TreeTagger was used for part-of-speech tagging, and CQPWeb/CWB framework was employed as the corpus interface. The whole data formed a corpus of 3,548.008 words as one can see in the Table 1 below:

Table 1.
The Reading Teacher Corpus Metadata

Metadata	
Total number of corpus texts	952
Total words in all corpus texts (Token)	3.548.008
Word types in the corpus	54.295
Type/token ratio	0.0153

Collocations

Phillips (1983, 1985) offers the theoretical foundation for collocation networks, which examines the connection between collocates and macrostructure within a text. According to Phillips (1989), these networks, also referred to as "lexical networks," can be utilized to implement the psychological concept of a text's "aboutness." In essence, collocation networks serve to understand a text's central themes and ideas (Vaclav, McEnery, & Wattam, 2015).

In Reading Teacher, the concepts that formed collocations with the concept of reading were examined in the following three different ways: a) The first collocations (such as reading comprehension, close reading, reading recovery) consisted of the most frequently used concepts with reading regardless of the word types. b) In the second stage, concepts that described the concept of reading and collocated with an adjective or similar words (such as independent reading, oral reading and repeated reading) were examined. c) In the third stage, the verbs that formed collocation with reading were identified and discussed. Concepts that formed collocation with reading are classified within themselves.

Keywords list for sub-corpora

RT Corpus was divided into 2012-2016 and 2017-2021, and two different corpora were formed. These two corpora were compared in terms of concepts used in the first five years and the ones in the last five years. In this way, the concepts with ascending trend and the concepts with descending trend in the RT corpus.

Analysis

In the data analysis of RT, word forms and maximum window span were taken as +/-5 in determining the concepts that formed collocation with reading. In filtering the obtained collocations as word types, +/-3 distances and at least five (5) frequency values were taken into account.

Analyses were conducted considering the total number in the whole corpus, expected collocate frequency, observed collocate frequency, the number of texts they appeared in and log-likelihood values of the concepts forming collocation with reading.

Findings

In this section, the most frequently used words in RT, the nouns, adjectives, and verbs that form collocations with the concept of reading, and the usage of the collocations by years were presented. In addition, the RT corpus was divided into two five-year periods as mentioned above. By doing this, we identified the ascending and descending trends in the use of those collocations.

Table 2.
The Most Frequent Ten Words in RT Corpus

Number	Word	Frequency
1	Students	40347
2	Reading	19919
3	Teachers	13117
4	Text	10975
5	Writing	9709
6	Literacy	8264
7	Words	8156
8	Use	8076
9	Children	7878
10	Texts	7417

Table 2 shows the most frequently used content (lexical) words in the articles published in Reading Teacher in the last decade. These words show which concepts were focused intensively in the academic studies published in RT in the last ten years. Based on this, it can be said that the studies on reading in RT focused on the following concepts of a) reader [students and children] (marked with blue colour), b) reading and

writing ability (marked with gold colour), c) teacher (s) (marked with green colour) and d) reading material [text, texts, and words] (Marked with orange colour)

A vast majority of the articles stress the important role these elements in the teaching-learning activities play an important role in the improvement of reading/reading comprehension. The reason for the high frequency of these words might be due to the fact that the study area of the journal is directly related to a) twelve-year-old children, b) teaching content-reading skills for these children, and c) educators providing this education.

Thus, it is reasonable to say that research efforts in the field in the mentioned decade, considered the focus on students, their reading and writing, their teachers and the reading materials (texts and the vocabulary the students encounter in the reading materials) as important areas for reading research. One can raise the question: Why so much emphasize on these areas? We hope to discuss this question by the help of our findings about reading collocations presented in the following table:

In Table 3, the first twenty words that form a collocation with the concept of reading are listed according to their log-likelihood values. As one can see in the table (Table 3) the concept of comprehension is the one that collocates with reading most. Considering the log-likelihood value of comprehension and the frequency of its occurrence and collocation in the corpus, it can be said that the last decade's reading studies mostly focus on understanding the content of the texts.

The findings also reveal that the content focus is on sub-concepts such as reading practices/instructional routines [guided, independent, close, oral, aloud and share], intervention/support [recovery, specialist, specialists], time of reading [during, while, after], understanding and accuracy [achievement, fluency, comprehension], standards [programs], relationship [writing] and reader-based components [motivation, difficulties] are the concepts frequently collocate with the concept of reading.

We wanted to conduct a more detailed analysis of these collocations during the last decade (2012-2021) and see whether there is any difference between the first five-year (2012-2016) and the last five-year period (2017-2021). The following figure (Figure 1) presents the results:

In Figure 1, the usage frequency of the concepts collocating with reading within one million words in the last ten years is shown according to years. The results show the following: a) "reading comprehension, reading, and writing relationship and reading instruction" were frequently used within a million words ($f \geq 100$) almost every year in the last decade. b) "close

Figure 1.
Distribution of collocations by years

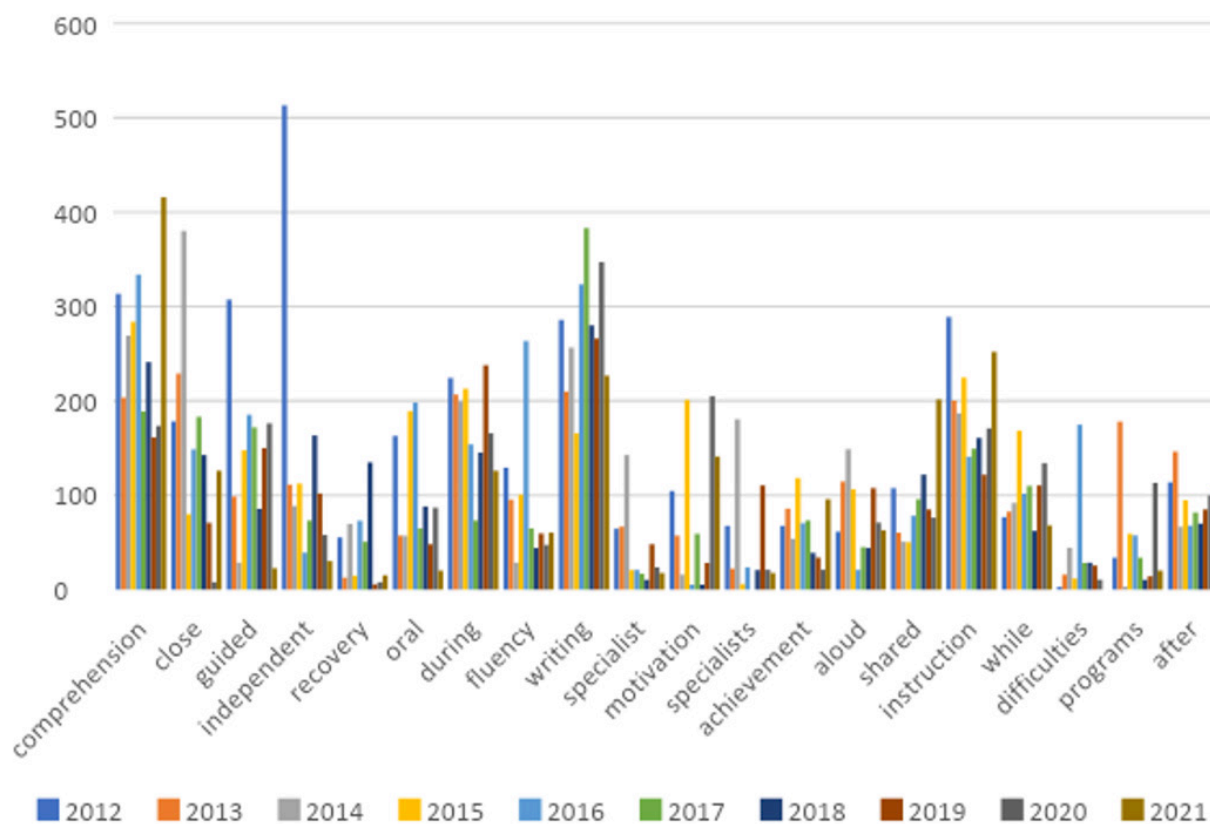


Table 3.
Reading collocations

	Word	Total no. in the whole corpus	Expected collocate frequency	Observed collocate frequency	In no. of texts	Log-likelihood value
1	comprehension	3433	115.64	923	270	2440.065
2	close	915	30.822	532	86	2392.052
3	guided	931	31.361	484	126	2025.445
4	independent	927	31.226	442	141	1748.987
5	recovery	162	5.457	158	29	1034.431
6	oral	1100	37.053	344	92	1018.649
7	during	3866	130.226	611	286	994.173
8	fluency	1053	35.47	319	98	922.58
9	writing	9709	327.046	980	378	895.342
10	specialist	207	6.973	145	49	734.989
11	motivation	1206	40.624	294	55	717.169
12	specialists	277	9.331	159	33	708.613
13	achievement	723	24.354	232	103	699.896
14	aloud	1028	34.628	270	137	699.551
15	shared	1739	58.578	337	112	672.056
16	instruction	6771	228.08	669	256	590.058
17	while	2286	77.004	356	200	569.633
18	difficulties	295	9.937	125	41	457.377
19	programs	763	25.702	182	47	435.889
20	After	2524	85.021	327	210	422.374

reading” and “independent reading” were used more frequently in the first years, but their usage frequency has decreased recently. c) The use of independent reading in 2012 ($f = 513.28$) was the highest of the most frequent collocations in the last ten years, but the frequency of use ($f = 111.31$) in 2013 dropped by about one-fifth, and this descending tendency continued gradually after 2018. d) Independent reading, reading comprehension, guided reading and reading instruction were the most frequently used collocations in 2012. e) The results show a clear tendency: f) Reading comprehension has never fallen off the agenda of RT, even with the least usage rate ($f = 161.39$) in 2019 and in the following years. g) The year of 2021 is the year in which reading comprehension was used the most frequently ($f = 415.78$). h) In addition to reading comprehension, mostly used collocations in recent years were reading-writing ($f = 226.79$), reading motivation ($f = 141.11$), shared reading ($f = 201.59$) and reading instruction ($f = 251.99$).

These findings clearly show that understanding, instruction, writing and instructional routines are among the main concepts that collocate with reading. Although they have different usage rates according to years, they constitute the main areas of reading research and practicing research-based reading instruction. We wanted to go even further and identify the kind of reading activities the researchers emphasized during the period of 2012-2021. In order to do this, we identified the most frequent reading collocations predominantly with adjectives and

similar type of descriptive words. The following table present the results:

In Table 4, the first twenty adjectives that collocate with reading are listed according to their log-likelihood values. These concepts, frequently used in RT Corpus, can be categorized and discussed with focus on the way they describe the nature of reading. The results show the following: a) Adjectives that describe the concept of reading mostly consist of instructional routines [close reading, fluent reading, independent reading, oral reading, repeated reading, shared reading, silent reading, choral reading, dialogic reading, take-home reading, wide reading]. b) The log-likelihood value of take-home reading (programs) is high, and it is likely to be used in future studies considering the observed value and the number of texts it is used. c) Some of the collocations in the table are towards improving the basic reading skills [basal reading, early reading and foundational reading]. d) Reading format/medium [online reading and traditional reading] can be considered as another category. e) The frequency of reading online is higher than traditional (paper-based) reading. Among the collocations, in spite of its observed value and being mentioned in just one text during the last ten years, the log-likelihood value of canine-assisted reading is observed to be high. Canine-assisted reading is usually found in programs for children with special educational needs. This can be a topic for another project.

Table 4.
The Most Frequent Reading Collocations with Adjectives

No.	Word	Total no. in the whole corpus	Expected collocate frequency	Observed collocate frequency	In no. of texts	Log-likelihood value
1	close	915	30.822	474	81	1979.048
2	independent	927	31.226	434	141	1696.99
3	oral	1100	37.053	331	89	952.506
4	repeated	407	13.71	106	44	272.687
5	fluent	181	6.097	67	52	223.625
6	shared	1739	58.578	198	74	215.518
7	silent	160	5.39	60	25	202.063
8	choral	47	1.583	34	23	176.035
9	online	1363	45.912	157	33	173.643
10	take-home	33	1.112	23	1	116.177
11	early	1810	60.97	158	84	112.408
12	informational	1798	60.565	157	73	111.758
13	dialogic	238	8.017	47	12	95.31
14	wide	366	12.329	57	33	91.119
15	voluntary	32	1.078	19	8	86.511
16	basal	129	4.345	33	9	83.666
17	canine-assisted	15	0.505	13	1	76.515
18	informal	220	7.411	38	23	67.693
19	traditional	701	23.613	71	36	64.965
20	foundational	225	7.579	35	24	55.875

In Figure 2, the frequency of the use of adjectives that collocate with reading in one million words in the last decade is shown by years. The displayed results clearly show the following: a) independent, close and oral are the adjectives that frequently describe the concept of reading. b) Independent reading is the most frequently used collocation with its usage rate in 2012 (f=500.99). The usage rate of this collocation shows a descending tendency after 2018 (f=160.78). Close reading, on the other hand, shows an ascending tendency in 2012, 2013 and in 2014 its collocation reached the highest usage rate (f=332.54). In the following years its usage rate decreased to its lowest level in 2019 (f=65.12). c) Although the usage rate of shared reading, early reading, traditional reading, and informal reading in research studies varies from year to year, there is an ascending tendency in their usage in recent years. d) The usage rates of fluent reading, silent reading and wide reading varies from year to year, their usage shows a descending trend in recent years. e) In the following section, we went further and tried to find the most frequent reading collocations with verbs. By doing so, we expect to identify the expected activities related to reading and/purposes of reading activities. The following table show the results.

In Table 5, the first twenty verbs collocating with reading are listed according to their log-likelihood values. In our view, the verbs that form collocations with reading can be classified under five different

groups considering their usage: a) Action verbs to achieve a goal or solve a problem about reading [implement, deliver, adjust, monitor, facilitate] b) Improvement verbs to make reading better or more effective [improve, enhance, stimulate, raise] c) Goal-oriented verbs to achieve a specific outcome or objective for reading [persist, increase, achieve, promote] d) Problem-solving verbs to address a challenge [differentiate, prevent, solve] e) Impact verbs to influence or affect reading [affect, promote, deliver and monitor].

Some of the collections may fit into more than one group, depending on their context. The above mentioned reading related activities and purposes reminds us of the importance of teaching-learning related activities that usually are incorporated or expected to be incorporated in reading. They remind us about the necessary activities and purposes when educationists are targeting improvement of the students' reading comprehension. The following figure shows the distribution of reading collocations with the above mentioned verbs by year.

As one can see in Figure 3, the frequency of the use of verbs that collocate with reading in the last decade of RT varies from year to year. The results can be summarised as follow: a) The verb improve is the most frequently used one. Although its usage was low in 2013 (f = 3.18) and 2018 (f = 2.59), its usage rate is quite high in

Figure 2.
Distribution of reading collocations with adjectives

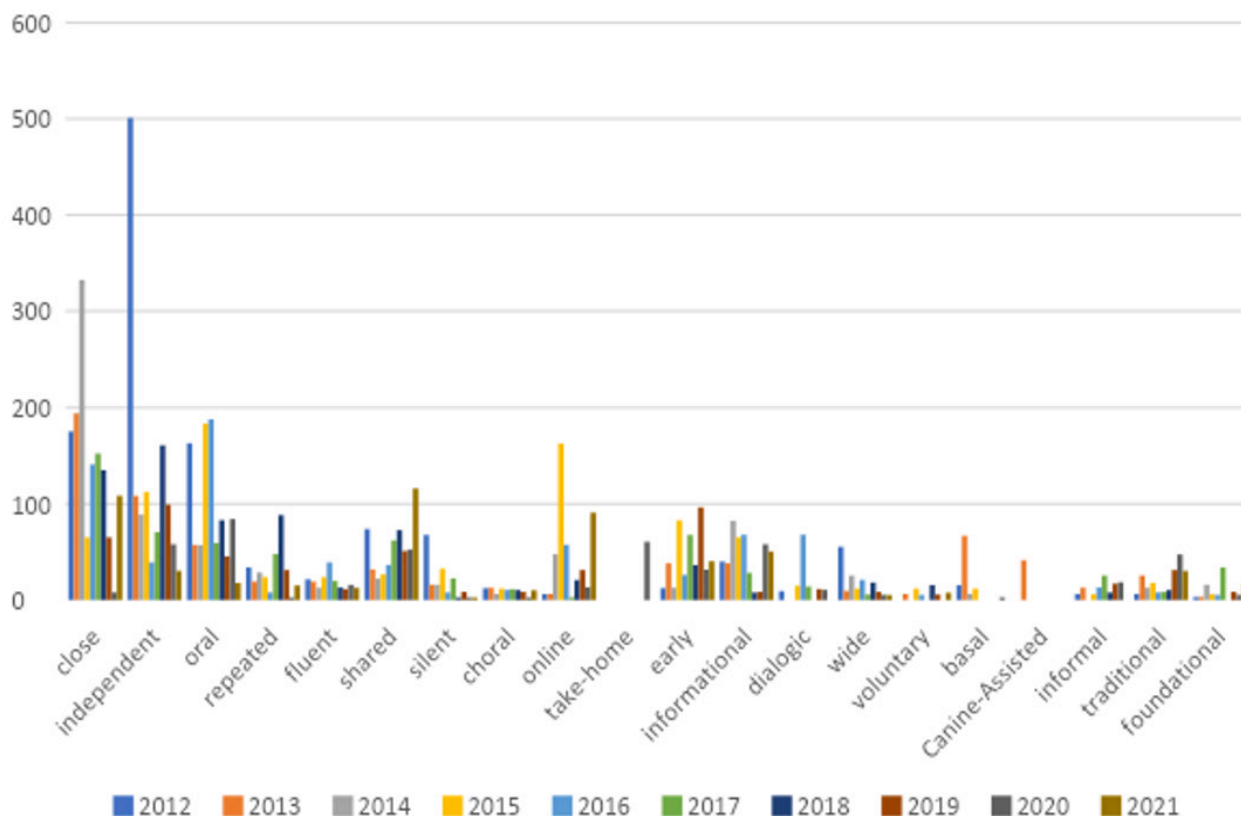
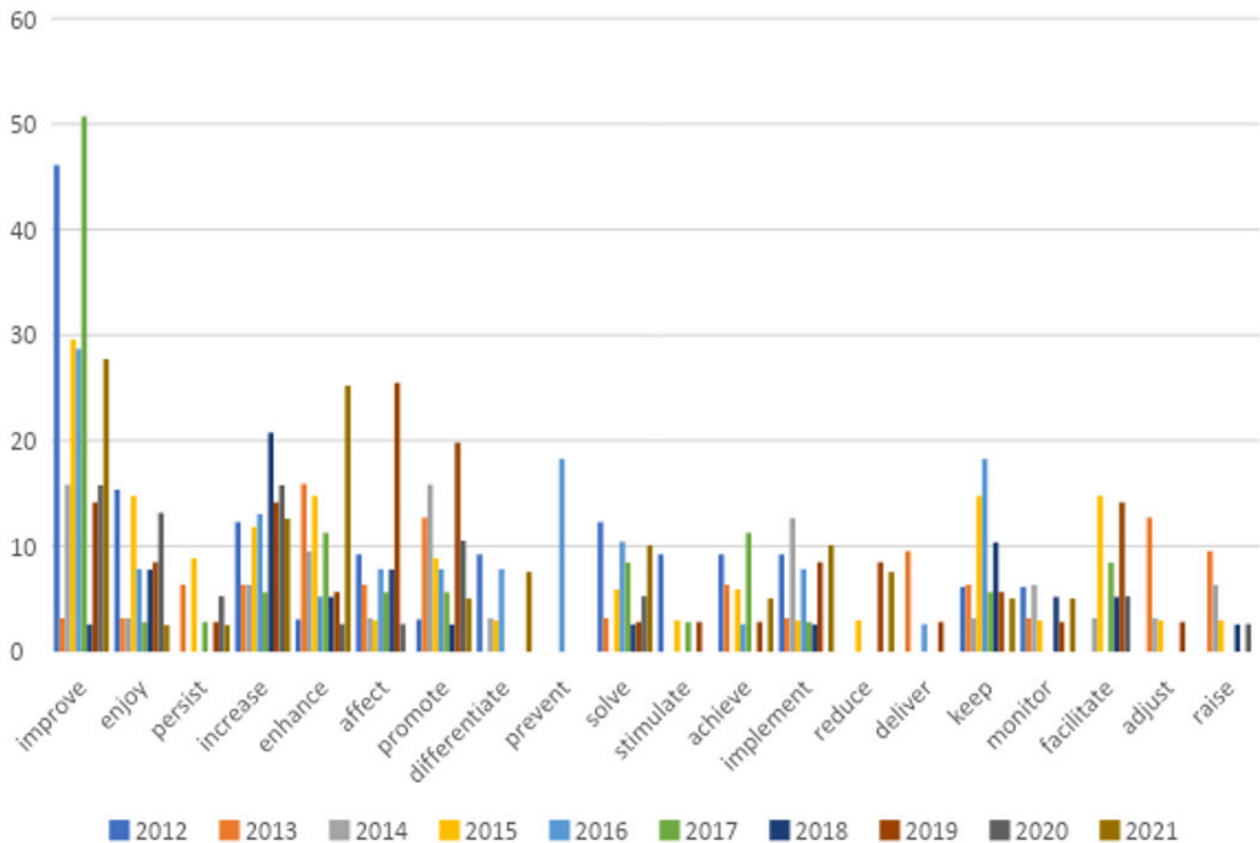


Table 5.
The Most Frequent Reading collocations with verbs

No.	Word	Total no. in the whole corpus	Expected collocate frequency	Observed collocate frequency	In no. of texts	Log-likelihood value
1	improve	554	18.661	83	60	127.157
2	enjoy	261	8.792	28	24	27.958
3	persist	49	1.651	10	9	20.898
4	increase	623	20.986	43	36	18.484
5	enhance	474	15.967	35	30	17.678
6	affect	295	9.937	25	16	16.817
7	promote	537	18.089	32	27	9.064
8	differentiate	117	3.941	11	10	8.914
9	prevent	63	2.122	7	3	7.355
10	solve	365	12.295	22	14	6.462
11	stimulate	59	1.987	6	4	5.523
12	achieve	252	8.489	15	14	4.233
13	implement	395	13.306	21	18	3.934
14	reduce	97	3.267	7	3	3.352
15	deliver	61	2.055	5	3	3.152
16	keep	573	19.301	27	21	2.836
17	monitor	208	7.006	11	10	2.016
18	facilitate	380	12.8	18	16	1.947
19	adjust	123	4.143	7	6	1.698
20	raise	147	4.952	8	7	1.645

Figure 3.
Distribution of reading collocations with verbs by year



other years. The usage rate of improve in 2012 ($f = 46.1$), 2015 ($f = 29.57$), 2016 ($f = 28.69$), 2017 ($f = 50.71$), and 2021 ($f = 27.72$) is higher than all other verbs. b) The usage rate of the verb improve in 2017 is the highest one among the first twenty verbs that form a collocation with reading. c) Improve reading is generally used to improve reading comprehension, reading abilities, achievement, reading fluency, reading outcomes, reading rate. Similarly, it is seen that increase and enhance are used to improve and increase students' reading level, reading comprehension, reading motivation, reading fluency, automatic, reading development skills frequently in recent years.

These findings show that the studies published in RT focused more on the development of reading-related skills in the last decade. The verb prevent - used only in 2016 ($f=18.26$) in the last ten years - is among the first twenty actions with the observed collocate frequency, in number of texts and log-likelihood values, and it is observed that it is used with the concepts of reading difficulties, reading problems and reading failure.

The frequency of the words, adjectives and verbs that are collocated with reading in research articles tells us not only the main focus in the studies of reading, they also gives readers an important information about what to be aware of when one work with reading

and what and how the educationists must target to improve the skills that contribute to the improvement of good readers i.e. readers who possess the necessary skills and strategies necessary to comprehend a written text at an age appropriate level. We mean that the keywords in the scientific research articles have a similar function. In the following section, we present the results of our corpus study in which we looked at the frequency of the keywords in the first five years (2012-2016) compared to the last five years (2017-2021):

The data in Table 6 is based on the two sub-corpora of RT Corpus. The first sub-corpora shows the period of 2012-2016 (Freq 1) and the second one for 2017-2021 (Freq 2). Based on this, the first five years and the last five years were compared, and the frequently used concepts and their usage were presented. The results indicate the following: a) When the frequency values are compared, children, Common Core State Standards (CCSS) reading, e-books, picture, child, e-book and read were used more in the first five years compared to the last five. b) In the last five years, the concepts of literacy, multilingual, translanguaging, linguistic, coaching, bilingual, preservice, languages, Spanish, practices and running were used more than the first five years.

Table 6.

Keywords first five years (2012-2016, Freq 1) compared to last five years (2017-2021, Freq 2)

No	Word	Freq 1	Freq 1 (per mill)	Freq 2	Freq 2 (per mill)	+/-	Log-Likelihood
1	children	5287	3152.42	2591	1384.91	+	1262.58
2	CCSS (*)	655	390.55	28	14.97	+	783.84
3	literacy	3018	1799.51	5246	2804.03	-	390.17
4	multilingual	56	33.39	520	277.94	-	382.14
5	reading	10723	6393.68	9196	4915.33	+	345.56
6	translanguaging	23	13.71	350	187.08	-	309.77
7	e-books	247	147.28	15	8.02	+	274.44
8	standards	1222	728.63	628	335.67	+	264.75
9	linguistic	159	94.81	603	322.31	-	229.58
10	coaching	149	88.84	576	307.88	-	224.05
11	bilingual	143	85.26	556	297.19	-	217.65
12	preservice	54	32.2	356	190.28	-	217.12
13	languages	270	160.99	757	404.62	-	190.35
14	picture	1449	863.98	916	489.61	+	186.62
15	child	902	537.82	476	254.43	+	184.64
16	e-book	164	97.79	10	5.35	+	182.04
17	Spanish	247	147.28	698	373.09	-	177.82
18	practices	962	573.6	1796	959.98	-	173.38
19	read	4029	2402.32	3317	1772.96	+	169.25
20	running	92	54.86	388	207.39	-	165.43

(*) CCSS: Common Core State Standards in the USA.

One of the two important findings in this table is that a) the frequency rates or usage situations of the concepts e-book and e-books decreased by 1/6 in the last five years. It is noteworthy that although technological possibilities develop day by day and offer different applications and systems related to reading, they occupy less space in studies on reading. b) Linguistic diversity related concepts such as multilingual, translanguaging, bilingual and languages became more prominent in the last five years.

Discussion and Conclusion

In this study, we investigated concepts that collocate frequently with the concept of "reading" in RT journal in the last ten years, the distribution of these collocations by years, which concepts have come to the fore in RT recently, and which concepts have decreased in their usage rate. The corpus-based findings in the research show that "comprehension" is one of the most important components of reading. Besides being one of the most frequently used concepts on its own in RT Corpus, comprehension is the most likely concept to be seen collocating with reading. In the corpus, it was also observed with different components such as techniques, skills, strategies, activities, scores, attitudes and abilities.

Concepts such as close, independent, fluency, which often collocate with reading, are comprehension-oriented concepts. It is reasonable to conclude that research on reading during the last decade stress the importance of reading comprehension by identifying the following:

- a. the factors, the skills and the reading strategies that are necessary for reading comprehension, and
- b. the instructional methods and strategies that help the students to improve their skills for reading comprehension.

Although there is a limitation in this study due to the fact that it is based only on corpus data from 2012 thru 2021, our research is based on peer-reviewed research 952 articles published in a journal, the Reading Teacher, which is one of the world's well-known journals with a special focus on reading.

The findings reveal that the main goal of reading studies is to highlight the elements of reading comprehension and the methods, techniques, skills, strategies, activities and attitudes necessary to achieve the ability of reading comprehension. Our findings are consistent with the earlier studies which were done through content analysis (Jerrolds, 1992; Stahl & Fisher, 1992; Pearson, 1992; Dillon, et al., 1992 and Mohr, et al., 2017).

From the past to present, reading comprehension has been one of the main subjects of academic studies and it has maintained its importance almost in most of the reading-focused publications. Our study also shows that reading and reading comprehension are multidimensional and complex processes and there are different components that need to be investigated further. However, in the aforementioned studies, RT was examined by content analysis and generally through keywords. The main difference of the current study is to make direct word frequencies and collocation analyses on the words used in the article content. While content analysis makes it easier to look at studies in the field of reading from a wider perspective and to understand reading based on it, this corpus-based study has given the chance to present more detailed results.

Considering the usage rates in RT Corpus in the last ten years, two more concepts are also worth mentioning. One of them is writing and the other is instruction. These concepts frequently collocated with reading in RT in the last decade, and their usage rates were quite high compared to other concepts almost every year. For example, independent reading is a quite frequent concept, but it has either a very high (2012) or a very low (2021) usage rate according to the years of use. However, writing and instruction are intensely used concepts every year in the last decade. This finding is very important to argue that reading as an important and lifelong-needed skill cannot be considered independently of writing skill. In addition, when the verbs and adjectives are forming collocations with reading, our study shows that instructional routines and actions that support and improve reading are always necessary. Furthermore, we can say that a tendency towards frequently used concepts related to reading sends the educators an important message: The students' and the teachers' learning and development are interrelated.

Another remarkable finding is that the concept of reading difficulties was frequently examined only in 2016 ($f= 174.76$) and used quite few in other years, compared the use of elements to improve reading process and reading comprehension, such as "comprehension, fluency, recovery, while and after reading". Reading problems was the eighth most frequent article topic in the study conducted by Dillon, et al., (1992), and the twenty-first in Mohr, et al., (2017). It seems that researchers, educators and editors of the journal preferred to focus on comprehension rather than focusing directly on "difficulties or problems" during the last decade.

Finally, we want to underline the influences of the national contexts and the debates on the researchers' agendas. There is a likelihood that several national

events and expert-panel publications in the USA have had some impact on the research topics that the researchers and journal editors have given priority in the last decade.

With these reflections in mind, we hope the following conclusions from our study presents an important contribution to the field of reading:

1. The ten most frequently used concepts in RT journal consisted of reader, teacher, reading material and reading-writing related concepts. Reading, the main subject of this study, was the second most frequently used concept.

2. Regardless of the part of speech, it was seen that the most frequently used concepts collocating with reading are the collocations for reading practices or instructional routines. Among these collocations, the most frequently used ones in the last ten years are independent reading and reading comprehension. Reading comprehension, reading-writing and reading instruction are the two most common collocations in the publications from 2012 to 2021.

3. When the collocations with reading formed by adjectives are examined, it is seen that the concepts that often describe reading are instructional routines, basic reading skills, and reading medium. It is also observed that the most frequently used concepts in the last ten years among the adjectives collocating with reading are close, independent, oral reading. Independent reading was the most frequently used collocation last year, but its usage rate had decreased after 2018. Close reading, shared reading, online reading, early reading and informational reading collocations, had different usage rates till 2021, but their usage have increased since then.

4. The verbs forming collocation with reading consist of action, improvement, effective, goal-oriented, problem solving, and impact verbs for reading skills. In the last ten years, the strongest verb collocating with reading is "improve". Although the usage situations have changed over the years, the verbs whose usage rate increased in 2021 compared to previous years are improve, enhance, solve, implement.

5. In the RT corpus, children, Common Core State Standards (CCSS) reading, e-books, picture, child, e-book and read were used frequently between 2012 and 2016 but less in 2017-2021. Concepts with higher usage rates between 2017-2021 compared to 2012-2016 were literacy, multilingual, translanguaging, linguistic, coaching, bilingual, preservice, languages, Spanish, practices, and running. This tendency can be related to national reading-related debates, technological developments, and the increased awareness of linguistic diversity in the American schools.

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