

Creating knowledge together

Fostering Empathy With 360-Cinematic VR

Analyzing the Multidimensional Construct of Empathy and Perceived Resonance

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Virtual reality – a hype or hit?

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A hype?

- Commercially driven
 entertainment technology
- Without valid educational benefits
- Lack of software that suits educational purposes
- Too costly and technologically advanced for use in any school

A hit?

- Immersion, interaction, and user involvement
- A sense of presence provided
- Co-creating ecologically valid content
- Combining VR-experiences with high-taxonomic activities

What is 360-cinematic VR?

- The term «360-cinematic VR» denotes an experience in which users wear head-mounted displays (HMD or VR headsets) that enable them, by turning their heads, to gaze around in a virtual or simulated world of moving images.
- This conceptually and technically differs from «360-interactive VR», where users can interact directly with the narrative by manipulating protagonists or trajectories virtually.

Enhancing empathy to prevent bullying in school

- Studies have shown that developing cognitive and affective empathy is negatively correlated with bullying behaviour and victimization.
- There is a **persistent call for innovative ways** to implement measures to reduce the prevalence of bullying in schools.
- VR has proven to be successful in eliciting empathic responses.



VR and empathy

- VR as an «empathy machine»
- Empathy has been referred to as "the ability to comprehend and respond to the emotions, thoughts, and experiences of others" (Yalçın & DiPaola, 2020)
- VR may enhance **cognitive empathy** as virtual 360-degree scenes provide viewers with vivid visual information, depicting detailed and realistic portrayals of the protagonists' situations.
- However, VR may even elicit **emotional empathy**, as the sense of presence and immersion in virtual scenes can transmit the protagonists' feelings through emotional contagion.

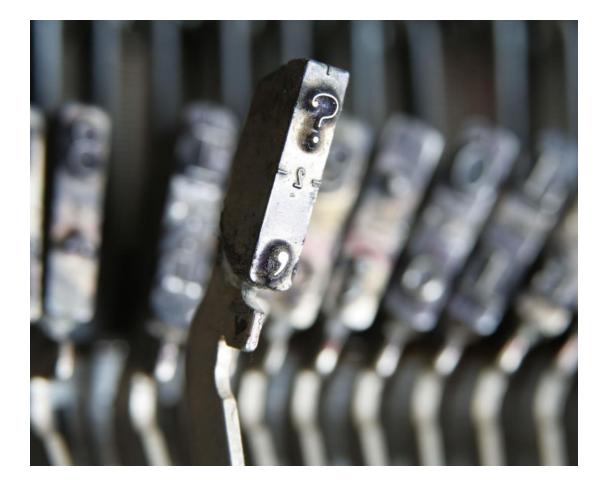




Can VR enhance cognitive empathy?

- Martingano et al. (2021) argue that eliciting cognitive empathy requires effortful mentalizing, "such as using one's own imagination to construct others' experiences".
- Cognitive empathy is typically developed through **reading fiction or acting**, as the reader or actor must interpret the fictitious characters' motives and intentions.
- This is not provided for in VR experiences, as the vivid and immersive virtual scenes explicitly display the characters' thoughts and feelings, affecting viewers emotionally but not cognitively.
- Martingano et al. advocate for a dual approach to enhancing empathy, incorporating both cognitive and emotional aspects—a so-called "two-pronged" approach.
- This could be achieved by adding mentalizing tasks to the VR experience, such as asking "how a virtual person is thinking or feeling, asking them to predict what to do next, or explaining why they acted as they did" [10].

Research questions



- In what ways can co-creating and engaging with cinematic VR experiences involving ethically complex situations foster empathic responses among lower secondary students in a Norwegian classroom? (RQ1).
- Can co-creating VR-based teaching and learning resources create moments of resonance for the students? (RQ2).

Empahty as a multidimensional construct

M. H. Davis (1980; 1983) developed a multidimensional approach to individual differences in empathy alongside an interpersonal reactivity index (IRI), measuring four dimensions of empathy:

- 1) Perspective Taking (PT) involves the ability to adopt the psychological viewpoint of others
- 2) Fantasy (FS) measures the tendency to be transported by imagination into the feelings and actions of fictional characters in books, movies, and plays
- 3) Empathic Concern (EC) assesses "other-oriented" feelings or sympathy and concern for unfortunate individuals
- 4) Personal Distress (PD) measures the extent to which "self-oriented" feelings of personal anxiety and unease arise in tense interpersonal settings.

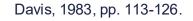
Empathy aligned with social competence

PT: A correlation between PT and the **capacity for non-egocentric behaviour**, as PT enables "an individual to anticipate the behaviour and reactions of others, thereby facilitating smoother and more rewarding interpersonal relationships"

FS: Individuals with high degrees of fantasy abilities are "more susceptible to emotional responses and thereby exhibit greater sensitivity", both self-oriented and other-oriented.

EC: Is linked to **high levels of selflessness and concern for others** and is negatively associated with boastfulness and egotism. However, EC may also be connected to shyness and social anxiety.

PD: **Correlates with social dysfunction**, as individuals with high levels of PD tend to be "more shy, more socially anxious, and less extraverted".



Hartmut Rosa's resonance

Rosa explains the occurrence of perceived resonance as a fourfold process comprising moments (Ge. Momente) of affection, self-efficacy, transformation, and uncontrollability.

- First, resonance is perceived as being affected (Ge. Affizierung) or touched (Ge. Berührtwerden) by people, incidents, stories, or music, either emotionally or existentially.
- Second, a response is triggered, either as engagement, agency, or personal investment (Ge. Selbstwirksamkeit).
- Third, something in **the person changes or is transformed**, whether it be values, understanding, or attitudes (Ge. Anverwandlung).
- Lastly, Rosa emphasizes that experiences of resonance are unpredictable (Ge. Unverfügbarkeit). If someone tries to control the resonance instrumentally, it vanishes.



The novelty of this study

The novelty of this contribution lies in:

- The didactic co-creative design process
- The qualitative analysis of the students' responses, employing a typological thematic analysis derived from Davis' multidimensional construct of empathy.



Co-creation process

Co-production of the 360-videos

Co-writing manuscripts

Intervention where the students experienced and discussed the ethical dilemmas in the 360-videos

Five 360-videos displaying ethically challenging situations

Narratives of chauvinistic bullying, group-based ostracizing, or use of derogatory or sexist language.

Video 1: Groups of male peers delivering sexualized comments to one of the passing girls.

Video 2: Two female students converse about one of them having been filmed naked in the wardrobe, and that the video has been circulated on a social media platform.

Video 3: A female student is assaulted with sexual comments, but no one responds, including a group of teachers on recess supervision duty who are busy scrolling their smartphones.

Video 4 and 5: Displaying the perspective of the one not invited to a party (short and long version)



Film 2 Snikfilmet i garderoben

Film 4 B Er du ikke invitert på festen?

Method: Typological Thematic Analysis

- Two lower secondary school-classes (N = 45) participated in the study.
- The classes were selected through convenience sampling.
- A qualitative and exploratory research design was employed.
- The group discussions (N = 31) and subsequent group interviews (N = 7) were analyzed using a theoretically driven or typological thematic analysis, employing operational criteria selected from Davis' IRI model.

Empathy dimensions employed in the analysis

| Empathy dimension | Guiding explanation | Examples of corresponding IRI- questions |
|-------------------------|--|--|
| Perspective taking (PT) | I put myself in the participants' shoes in the simulated story. | 8. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT) |
| Fantasy (FS) | I was involved in the feelings of the participants in the simulated story. | 16. After seeing a play or movie, I have felt as though I were one of the characters. (FS) |
| Emotional Concern (EC) | I felt sorry for the protagonist in the simulated story. | 2. I often have tender, concerned feelings for people less fortunate than me. (EC) |
| Personal distress (PD) | I felt bad when I experienced the simulated story. | 10. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD) |

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Perspective taking

- The students demonstrated an ability to adopt the victims' perspectives
- They managed to identify with the precariousness of the victimized protagonists while acknowledging the potentially long-term and devastating effects of verbal harassment or intimidation.
- One of them stated: "I think it's very painful. I think it really sticks with you. Deeply. Maybe even for years afterwards. [...] eventually you start doubting yourself and others [...]."
- However, they admitted that intervening might come at a high cost, as they would risk becoming unpopular or subject to bullying themselves.

Fantasy

- Many students stated that they **identified with the feelings of the protagonist** experiencing harassment or ostracism in the simulated stories.
- After experiencing the various simulated scenes, the students described emotions such as feeling unsafe, disturbed, upset, scared, shocked, or sad, or, more explicitly, "having a knot in the stomach."
- They **identified with the girl being harassed with sexual comments** in the hallway, feeling hurt or lonely, as well as with the fear of the girl whose intimate video circulated.
- When approached as the person who was not invited to a party in the virtual simulation, **they easily put themselves in the shoes of the outsider**, sharing her feelings of distress and rejection.

Emotional concern

- Several students **felt sorry for the protagonists** who experienced verbal harassment or exclusion in the simulated stories.
- Reflecting on the situations afterward, they expressed a sense of responsibility to intervene in similar circumstances, either by comforting the victim, defending her against the offenders, or by trying to include her.
- However, the fear of being excluded held them back.
- Intervening could be even more difficult if popular peers carried out the harassment, as one of them stated: "I would have wanted to [help], but it's not always that easy. [...] You might not be as well-liked by the friends you're with."



Personal distress

- Watching the simulated situations even created feelings of apprehensiveness and helplessness in the students.
- These emotions were often connected to the role of being a bystander, observing peers suffer yet feeling unable, or even unwilling, to intervene due to fear of potential reprisals.
- When asked what might happen if he intervened in a bullying situation, one student stated: "You could've been yelled at in return — that they'd talk back and say mean things about you."
- They openly described the tension between the desire to help on one side and being restrained by anxiety on the other, as intervening might lead to a loss of reputation or social standing, or even result in being treated similarly to the victim.



Results & implications

- The portrayal of ethically challenging dilemmas in immersive 360-degree video facilitated access to emotional responses and autoethnographic reflection.
- The qualitative analysis showed that eliciting emotional responses and autoethnographic reflection connected to personal distress (PD) may open perspective-taking (PT) potentially leading to pro-social behavior.
- Identification (FS) with the protagonists in the 360-degree videos triggered emotional concern (EC), which was unanticipated by Davis' theory, yet confirming empathy as a multidimensional construct.
- The study offers empirical nuances to Rosa's resonance theory by demonstrating that the co-creation and engagement with VR environments can facilitate moments of **affective attunement**.



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