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# Fostering Empathy With 360-Cinematic VR

*Analyzing the Multidimensional Construct of Empathy and  
Perceived Resonance*

**Martin Smith-Gahrson, University of Agder, Kristiansand,  
Norway**



**Virtual reality – a hype or hit?**

# Virtual reality – a hype or hit?

## 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).*

# Empathy 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”.

Davis, 1983, pp. 113-126.

# 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



# 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 inviteret 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)



# Findings



# 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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