Assessing VR technology adoption and use among mid-life and older adults

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Purpose The Covid-19 pandemic is said to have been a catalyst for virtual reality (VR) adoption (Osterland, 2020). Older adults in the U.S. were among those who adopted technology at an unprecedented rate during the pandemic. Currently, there is research to suggest that VR may have significant social, cognitive, and health benefits for older adults in particular (Huang, 2020; Ball, Huang, & Francis, 2021) but there is still little information on older adults' adoption and use of VR. **Method** We conducted a three-wave cross-sectional survey using Amazon Mechanical Turk during Fall 2020, Summer 2021, and Fall 2022. From a total of 902 usable responses across all age groups, the analysis specifically focused on 56 older adults aged 55 and above, spanning the three years. The survey content centered on the acceptance and adoption of VR technology, alongside demographic data. Items were based on Lee et al. (2019), measuring perceived ease of using VR, perceived usefulness of VR, social interactivity, and actual usage. Each construct was assessed using a four-item scale, with responses ranging from 1 (strongly disagree) to 7 (strongly agree). **Results and Discussion** Our analysis of VR technology acceptance among older adults over three years reveals evolving perceptions and usage patterns. Perceived ease of use showed improvement initially, peaking in 2021, and then declining in 2022, yet it was still better than the baseline year, 2020. This trend suggests that users are becoming more comfortable with VR, though this comfort level may be plateauing. Perceived usefulness, after a dip in 2021, partially rebounded in 2022, indicating variable recognition of VR's benefits among users. Social interactivity experienced a notable increase in 2021 but fell back in 2022, still maintaining higher levels than in 2020, pointing to changing dynamics in how users interact within VR environments. Meanwhile, actual usage of VR, despite a minor increase in 2021, significantly declined in 2022, implying a drop in engagement or satisfaction. The consistent reduction in standard deviations across these metrics in 2022 suggests that user responses are becoming more homogeneous over time. These findings underscore the importance of continuous improvement and adaptation in VR systems to sustain and enhance user engagement, especially among older adults.

References

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Lee, J., Kim, J., & Choi, J. Y. (2019). The adoption of virtual reality devices: The technology acceptance model integrating enjoyment, social interaction, and strength of the social ties. Telematics and Informatics, 39, 37-48.

Ball, C., Huang, K. T., & Francis, J. (2021). Virtual reality adoption during the COVID-19 pandemic: A uses and gratifications perspective. *Telematics and Informatics*, *65*, 101728.

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Table 1. Descriptives of VR acceptance and use from 2020-2022

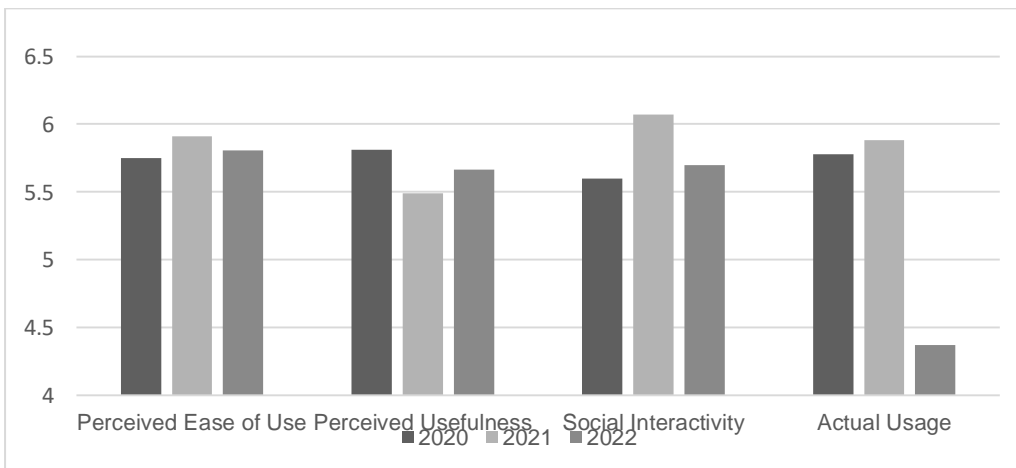| Year	Perceived Ease of Use		Perceived Usefulness		Social interactivity		Actual usage	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2020 (n=19)	5.747	0.168	5.809	0.171	5.598	0.193	5.778	0.245
2021 (n=10)	5.912	0.226	5.490	0.230	6.071	0.260	5.880	0.331
2022 (n=27)	5.805	0.137	5.662	0.140	5.695	0.158	4.371	0.201

Figure 1. VR acceptance and use from 2020-2022