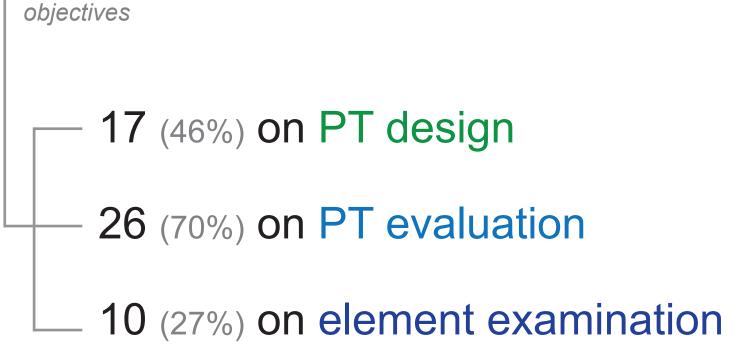
A Review of Empirical Studies on Persuasive Technology for Physical Activity: **Common Practices and Current Trends**

RESEARCH QUESTIONS

How are empirical studies of **persuasive** technoglogy (PT) conducted? How does this vary across different research objectives (design vs evaluation vs persuasive element examination)?

METHODS

key concepts se	arched:		
persuasive technology		y <u>e.g.</u>	"persuasive technology", – "persuasive system", "persuasive design", mHealth
A٨	ID		peroduoive deoigir, miteatti
physical activity		e.g.	 "physical activity", exercise
	searched in		
ACM Digital Library,			
Elsevier	Scopus,		
reference lists of prior reviews ^{2–4}			
	selected	criteria	 focusing on PT ; focusing on promoting physical activity; presenting empirical studies; published in peer-reviewed venues; published in English.
37 papers*			
	grouped by research		



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COMMON PRACTICES

PTDesign Studies on designing PT systems.			
specified user-centered design method (18%)			
reported user requirements gathering (41%) da			
PT Evaluation Studies on evaluating the effectiveness of PT systems or involved elements.			
used longitudinal deployment study with expe			
<i>involved</i> participants: mostly n<50 (2≤n≤220, average			
lasted 4 weeks, including 1-week baseline			
measured by by data collected by data collected by data collected by weasured			
user experience			
system usage data analyzed by			

Element Examination Studies on examining whether and how PT elements influence the effectiveness of PT systems. quantitative survey study used involved participants: usually n>200, general public data questionnaire collected b inferential statistics, modeling techniques analyzed by



1. Fogg, B. Captology: the study of computers as persuasive technologies. in Conference on Human Factors in Computing Systems, CHI EA 1997. 1997. Atlanta, Georgia. DOI: 10.1145/1120212.1120301 2. Kelders, S. M., Kok, R. N., Ossebaard, H. C. and Van Gemert- Pijnen, J. E. W. C. Persuasive system design does matter: A systematic review of adherence to web-based interventions. Journal of Medical Internet Research, 14, 6 (2012). DOI: 10.2196/jmir.2104 3. Orji, R. and Moffatt, K. Persuasive technology for health and wellness: State-of-the-art and emerging trends. Health Informatics Journal, 24, 1 (2018), 66-91. DOI: 10.1177/1460458216650979 4. Torning, K. and H. Oinas-Kukkonen. Persuasive system design: State of the art and future directions. in 4th International Conference on Persuasive Technology, Persuasive'09. 2009. Claremont, CA, United States. DOI: 10.1145/1541948.1541989 5. Prochaska, J. O. and Velicer, W. F. The transtheoretical model of health behavior change. American journal of health promotion, 12, 1 (1997), 38-48. DOI: 10.4278/0890-1171-12.1.38

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32, median 16)

- system logs
- questionnaire, interview
- post-study interview
- system logs
- descriptive statistics
- inferential statistics
- thematic analysis

Commonality in research topics and methods

Technology-driven trend

Limited generalizability of findings

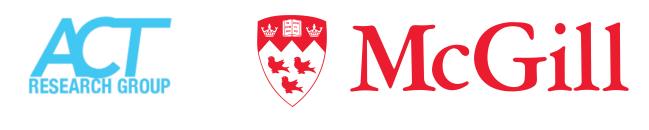
Insufficient attention to design process

- of PT design remains unclear.
- teenagers and older adults.

NEXT STEPS

Investigating how to better design behaviour change technology to support the needs of older adults living alone for physical activity.

- semi-structured interviews.
- deployment study.





TRENDS AND OPPORTUNITIES

- "Effects-oriented" trend: Studies fundamentally revolved around the effectiveness of PT systems or behaviour change strategies. Common methodologies were used for similar research objectives.

- Most studies tried to match existing behaviour change strategies or system features to users, instead of centering on user needs.

- Significant variance in evaluated system designs. - Great variance in examined persuasive elements.

Design process was often not reported in detail; thus, the rationale

Target users were rarely involved in the design process, especially

Developing this review into a full paper.

- Understanding user needs and identifying design opportunities via

Designing prototypes and clarifying the rationale of PT design for older adults through an iterative co-design process.

Evaluating PT system developed based on the prototypes via a

