

Electronic Supplementary Material 1

Search strategy

1. “user engagement”.ti,ab,sh.
2. engag*.ti,sh.
3. immersion.ti,sh.
4. flow.ti,sh.
5. involvement.ti,sh.
6. presence.ti,sh.
7. adherence.ti,sh.
8. attrition.ti,sh.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. digital.ti,sh.
11. web*.ti,sh.
12. computer.ti,sh.
13. online.ti,sh.
14. technology.ti,sh.
15. mobile.ti,sh.
16. smartphone.ti,sh.
17. 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16
18. “behavior?r change”.ti,ab,sh.
19. intervention.ti,ab,sh.
20. game*.ti,ab,sh.
21. multimedia.ti,ab,sh.
22. 18 OR 19 OR 20 OR 21
23. 9 AND 17 AND 22

Electronic Supplementary Material 2

Table 1. Characteristics of included studies.

Authors (Year)	Country	Study aim	Population	Technology	Programme length	Participant characteristics	Study design	Data collection method
Al-Asadi et al. (2014)	Australia	To identify predictors of pre-treatment attrition and formal withdrawal from the Anxiety Online program.	Anxiety	Website	12 weeks	N = 3,880; Mean age (SD) = 36.4 (12.1); % Female = 68.3	Cohort	Survey
An et al. (2006)	US	To identify rates of participation in the RealU intervention.	Smokers	Website	20 weeks	N = 257; Mean age (SD) = 20.1 (1.6); % Female = 70	Cohort	Survey
Arden-Close et al. (2015)	UK	To examine patterns of web usage amongst obese primary care patients within the POWeR intervention.	Obese individuals	Website	12 weeks	N= 132; Mean age (SD) = 51.6 (13.0); % Female = 66	Secondary analysis of RCT data, intervention arm	Website logs
Bellg et al. (2004)	UK	To conceptualise treatment fidelity and to offer recommendations for how to incorporate fidelity measures into intervention research.	N/A	N/A	N/A	N/A	Review, narrative synthesis	N/A
Ben-Zeev et al. (2014)	US	To assess the usability of and engagement with a mobile phone intervention.	Serious mental illness/substance abuse	Mobile phone	12 weeks	N = 17; Mean age (SD) = 40.5 (11.6); % Female = 41	Pre- posttest	Text-message log
Bianchi-Berthouze et al. (2007)	UK	To understand video game engagement based on body movements.	Healthy adults	Digital game	N/A	N = 14; Mean age (SD) = 25.0 (4.4)	Experimental, between-subjects design	Exoskeleton to measure upper body joint movement and video camera
Borrelli (2011)	US	To discuss the assessment, monitoring, and enhancement of treatment fidelity in public health trials.	N/A	N/A	N/A	N/A	Review, narrative synthesis	N/A
Bossen et al. (2013)	The Netherlands	To explore patient and study characteristics that facilitate or hinder usage of a Web-based	Patients diagnosed with hip and/or knee	Website	9 weeks	N = 199; Mean age (SD) = 60.0 (6.3);	Mixed methods including secondary analysis of RCT	Website logs and face-to-face interviews

		physical activity intervention.	osteoarthritis			% Female = 63	data, intervention arm	
Bouvier et al. (2014)	France	To gain a better understanding of what it means to be engaged and how to decide whether a behaviour reflects engagement or not.	Healthy adults	Digital game	N/A	N/A	Review, narrative synthesis	N/A
Boyle et al. (2012)	UK	To explore the diverse aspects of engagement and to develop a coherent understanding of engagement in computer games.	N/A	Digital game	N/A	N/A	Systematic review, narrative synthesis	N/A
Brigham (2015)	US	To explain the term 'gamification' and its current use.	N/A	N/A	N/A	N/A	Review, narrative synthesis	N/A
Brouwer et al. (2011)	The Netherlands	To identify methods that promote better exposure to internet interventions.	Primary prevention of physical chronic disease	Internet-delivered interventions	N/A	N/A	Systematic review, narrative synthesis	N/A
Brown & Cairns (2004)	UK	To develop a grounded theory of immersion.	Healthy adults	Digital game	N/A	N = 7; % Female = 43	Qualitative	Face-to-face interviews
Burns & Fairclough (2015)	UK	To quantify the degree of immersion in a digital world.	Healthy adults	Digital game	N/A	N = 20; Mean age (SD) = 23.7 (4.2); % Female = 35	Experimental, mixed design	Event-related potentials to task-irrelevant stimuli
Cairns et al. (2013)	UK	To explore how social play influences the immersive experience of digital gameplay.	Healthy adults	Digital game	N/A	N = 24; % Female = 42	Experimental, within-subjects design	Questionnaires
Calleja (2007)	Australia	To develop a conceptual model for understanding game involvement.	N/A	Digital game	N/A	N/A	Review, narrative synthesis	N/A
Carter et al. (2013)	UK	To compare the acceptability of a self-monitoring weight management intervention delivered by a smartphone app with that of a website.	Overweight individuals	Smartphone app, website	6 weeks	N = 128; Mean age (SD) = 41.2 (8.5); % Female = 77	RCT	Usage data
Chapman, Selvarajah, & Webster (1999)	Canada	To examine engagement in two types of multimedia training systems.	Healthy adults	Interactive software	N/A	N = 72; % Female = 69	Experimental, between-subjects design	Questionnaires

Chen et al. (2015)	US	To explore the nature of engagement with an online workshop for cancer survivors.	Cancer survivors	Web-based	8 weeks	N = 127; Mean age (range) = 52 (26-81); % Female = 82	Secondary analysis of RCT data, intervention arm	Usage data
Chiang et al. (2011)	Taiwan	To explore online game players' flow experiences.	Healthy adults	Digital game	N/A	N = 30; % Female = 63	Experimental, within-subjects design	Questionnaires
Chou et al. (2014)	Taiwan	To explore design factors that increase flow experience in mobile games.	Healthy adults	Mobile phone	N/A	N = 234	Qualitative	Focus groups
Christensen et al. (2009)	Australia	To review rates of adherence to internet interventions for anxiety and depression.	Anxiety, depression	Internet-based interventions	N/A	N/A	Systematic review, narrative synthesis	N/A
Chung & Gardner (2012)	Australia	To assess the effect of different kinds of induced interruptions on players' presence in a virtual reality theatre.	Healthy adults	Digital game	N/A	N = 36; Mean age (SD) = 22.4 (2.9)	Experimental, mixed design	Questionnaires
Couper et al. (2012)	US	To explore the qualities of engagement in an online intervention designed to promote fruit and vegetable consumption.	Healthy adults	Website	4 months	N = 2513; Mean age = 46.3; % Female = 69	RCT	Usage data
Crutzen et al. (2012)	The Netherlands	To assess whether user control increases website use.	Healthy adults	Website	N/A	N = 668; Mean age (SD) = 49.0 (16.0); % Female = 49.7	Experimental, between-subjects design	Questionnaires
Crutzen et al. (2013)	The Netherlands	To assess whether social presence may increase website use.	Healthy adults	Website	N/A	N = 458; Mean age (SD) = 49.0 (16.0); % Female = 50	Experimental, between-subjects design	Questionnaires
Cugelman et al. (2011)	UK	To explore the effect of persuasive and psychological design features to inform the development of online campaigns that seek to encourage health behaviour change.	Healthy adults	Internet-based interventions	N/A	N = 6028; % Female = 48	Systematic review, meta-analysis	N/A
Cussler et al. (2008)	US	To compare weight regain in	Overweight	Website	12 months	N = 161;	RCT	Website logs

		women randomised to receive an online intervention and those randomised to self-directed weight maintenance.	and obese women			Mean age (SD) = 48.0 (4.4); % Female = 100,		
Danaher et al. (2006)	US	To describe initial patterns of participant exposure to ChewFree.com.	Smokeless tobacco users	Website	6 weeks	N = 2523	RCT	Website logs
Davies et al. (2012)	Australia	To assess the relationship between website engagement and intervention outcomes in 10,000 Steps Australia.	Healthy adults	Website	24 months	N = 348; % Female = 64	Cohort	Website logs
Dennison et al. (2014)	UK	To assess whether POWeR intervention usage was enhanced by the addition of brief telephone coaching.	Overweight individuals	Website	12 weeks	N = 786; Mean age (SD) = 44.0 (12.7); % Female = 80	RCT	Website logs
Donkin et al. (2011)	Australia	To describe methods used to assess adherence to e-therapy and to evaluate the association of adherence and intervention outcomes.	Physical illness and mental health	Technology-driven interventions	N/A	N = 34,465	Systematic review, narrative synthesis	N/A
Donovan et al. (2015)	US	To assess the efficacy of Wellness & Success among community and college students.	Alcohol and other drug users	Computer-based	120 minutes	N = 415; Mean age (SD) = 21.4 (2.2); % Female = 73	RCT	Website logs
Fang et al. (2013)	US	To develop an instrument to measure flow elements in computer gameplay.	N/A	Digital game	N/A	N/A	Instrument development and validation	Survey
Ferguson (2015)	UK	To examine adherence to online interventions for individuals with hearing loss.	Hearing loss	Web-based	4 weeks	N = 44; Mean age (SD) = 65.3 (5.7); % Female = 34	RCT	Website logs
Funk et al. (2010)	US	To examine website use patterns associated with long-term weight maintenance.	Overweight individuals at risk of cardiovascular disease	Website	30 months	N = 348; % Female = 63	RCT	Website logs
Geraghty et al. (2013)	US	To model attrition in a dual-language internet smoking cessation intervention.	English or Spanish speaking smokers	Internet intervention	4 weeks	N = 16430; Mean age (SD) = 36.2 (10.7); % Female = 47	RCT	Survey

Glasgow et al. (2011)	US	To characterise usage patterns in the My Path self-management website.	Individuals with Type 2 diabetes	Website	4 months	N = 270; Mean age = 60; % Female = 48	RCT	Website logs
Graham et al. (2013)	US	To determine whether smokers recruited during the New Year period differed on website utilisation rates compared with smokers recruited during other time periods.	Smokers	Website	3 months	N = 136; Mean age (SD) = 43.2 (12.3); % Female = 71	Secondary analysis of RCT data	Website logs
Habibovic et al. (2014)	The Netherlands	To assess characteristics of 'completers' and 'non-completers' in the WEBCARE intervention.	Patients with cardioverter defibrillators	Website	12 weeks	N = 146; Mean age (SD) = 58.2 (9.9); % Female = 18	RCT	Website logs
Haines-Saah et al. (2015)	Canada	To determine the feasibility of engaging young adults in a user-driven, online support forum for smoking cessation.	Smokers	Web-based	12 weeks	N = 60; Mean age = 21 (range: 19-24); % Female = 43	Cohort	Manual entry of website activities
Han et al. (2012)	US	To assess social and psychological characteristics predictive of different levels of engagement with an online support group.	Women with a diagnosis of breast cancer	Web-based	4 months	N = 231; Mean age = 51; % Female = 100	Pre- posttest	Website logs
Harmat et al. (2015)	Sweden	To assess the co-variation of subjective ratings of flow with cardiovascular and respiratory responses whilst playing a computer game.	Healthy adults	Digital game	N/A	N = 77; Mean age (SD) = 27.8 (5.4); % Female = 52	Experimental, within-subjects design	ECG recording, respiratory belt
Herbert et al. (2010)	Canada	To examine whether the Theory of Planned Behaviour and the Transtheoretical Model are able to explain adherence and attrition in an online intervention.	Chronic insomnia	Website	5 weeks	N = 94; % Female = 62	RCT	Questionnaires
Helander et al. (2014)	Finland	To assess factors associated with sustained use of The Eatery, a mobile app that promotes healthy eating.	Individuals interested in healthy eating	Smartphone app	N/A	N = 189,770	Cohort	Usage data
Henshaw et al. (2015)	UK	To explore motivations for uptake, engagement, and	Hearing loss	Computer-based	4 weeks	N = 44;	Randomised,	Questionnaires,

		adherence to a computer-based auditory training programme.				Age range = 50-74	quasi-crossover	focus group
Hilvert-Bruce et al. (2012)	Australia	To examine whether non-completers drop out due to lack of efficacy and whether changes in delivery or clinician contact improve adherence.	Anxiety, depression	Online intervention	N/A	Study 1: N = 2107; Mean age (SD) = 40.1 (13.7); % Female = 64	Pre- posttest	Website logs
						Study 2: N = 1108; Mean age (SD) = 39.1 (13.6); % Female = 62		
						Study 3: N = 1090; Mean age (SD) = 40.1 (13.8); % Female = 64		
Hong et al. (2012)	Taiwan	To assess whether computer self-efficacy and 'competitive anxiety' are associated with flow.	Healthy adults	N/A	N/A	N = 101; % Female = 56	Cross-sectional	Survey
Horsch et al. (2015)	The Netherlands	To gain insight into strategies that enhance adherence to technology-mediated treatment.	Insomnia	Internet-based interventions	N/A	N = 2,961	Systematic review, meta-analysis; Qualitative	Face-to-face interviews, focus groups
Hsu & Lu (2004)	Taiwan	To identify predictors of users' acceptance of online games.	Healthy adults	Digital game	N/A	N = 233; % Female = 20	Cross-sectional	Survey
Hwang et al. (2011)	Taiwan	To explore the perceived usability of video games in an elderly population.	Elderly individuals (> 60 years)	Digital game	N/A	N = 60; % Female = 53	Qualitative	Interviews and observation
Irvine et al. (2015)	US	To evaluate the efficacy of FitBack.	Individuals with non-specific lower back pain	Mobile web app	8 weeks	N = 597; % Female = 58	RCT	Questionnaires
Jahangiry et al. (2014)	Iran	To assess adherence and attrition in a lifestyle	Individuals with metabolic	Website	6 months	N = 160; Mean age (SD) =	RCT	Attendance at follow-up

		intervention.	syndrome			44.5 (10); % Female = 34		assessment
Jennett et al. (2008)	UK	To assess whether immersion can be defined quantitatively.	Healthy adults	Digital game	N/A	N = 40; Mean age (SD) = 21.0 (3.5); % Female = 75	Experimental, between-subjects design	Questionnaires, eye tracking
Jennings (2000)	US	To describe theory and research from different disciplines relevant to creating engaging websites.	N/A	Website	N/A	N/A	Review, narrative synthesis	N/A
Johansson et al. (2015)	Sweden	To explore participants' experiences of non-adherence to Internet-delivered psychological treatment.	Generalised anxiety disorder	Website	8 weeks	N = 7; Mean age (SD) = 39.3 (17.1); % Female = 86	Qualitative	Face-to-face interviews
Kelders et al. (2012)	The Netherlands	To investigate whether particular intervention characteristics and persuasive design elements influence adherence to web-based interventions.	Health interventions	Web-based	N/A	N/A	Systematic review, narrative synthesis	N/A
Khadjesari et al. (2011)	UK	To determine the impact of incentives on follow-up rates in an online trial.	Alcohol users	Website	12 months	N = 7,935; Mean age = 38; % Female = 57	RCT	Questionnaires
Kim et al. (2013)	US	To test whether a novel mobile user engagement model may explain intention to engage.	Healthy adults	Smartphone	N/A	N = 297; % Female = 50	Cross-sectional	Survey
Klein et al. (2014)	The Netherlands	To assess the functioning of an intelligent mobile support system for therapy adherence and behaviour change.	Individuals with Type 2 diabetes, HIV, and/or cardiovascular disease	Smartphone app	N/A	N = 17	Pre- posttest	Survey
Kok et al. (2014)	The Netherlands	To examine user characteristics associated with adherence to the Mobile CT programme.	Depression	Website and mobile phone	8 weeks	N = 129	RCT, intervention arm	Website logs
Kuijpers et al. (2013)	The Netherlands	To explore the possible relevance of web-based interventions aimed at	Chronic illness	Web-based	N/A	N/A	Systematic review, narrative synthesis	N/A

increasing empowerment and physical activity in individuals with chronic illness for cancer survivors.

Lefebvre et al. (2010)	US	To develop an instrument to measure engagement with health information.	Healthy adults	Website	N/A	N = 230; % Female = 60	Instrument development and validation	Questionnaires
Leslie et al. (2005)	Australia	To describe engagement and retention with a physical activity website in a workplace setting.	Healthy adults	Website	8 weeks	N = 655; Mean age = 43; % Female = 50	RCT, intervention arm	Website logs
Lieberman (2006)	US	To develop and evaluate the effect of a personified guide on adherence to an online alcohol reduction programme.	Alcohol users	Website	N/A	N = 288; Mean age (SD) = 36.0 (12.1); % Female = 31	RCT	Website logs
Lin & Wu (2014)	China	To assess the impact of SMS reminders on adherence to follow-up in digital health interventions.	Health interventions	Mobile phone	N/A	N = 12,783	Systematic review, meta-analysis	N/A
Liu et al. (2009)	Taiwan	To examine user acceptance of three kinds of streaming media (text, audio, and video) during online learning.	Healthy adults	Multimedia	N/A	N = 88	Experimental, between-subjects design	Survey
Ludden et al. (2015)	The Netherlands	To assess the impact of different design features on adherence to web-based wellbeing interventions.	Healthy adults	Web-based	N/A	N/A	Review, narrative synthesis	N/A
Mahmassani et al. (2010)	US	To examine user behaviour in a multiplayer online role-playing game.	Healthy adults	Digital game	N/A	N/A	Cohort	Game logs
Manwaring et al. (2008)	US	To assess whether adherence predicts outcomes in an online programme for the prevention of eating disorders.	Individuals with high levels of weight concern	Internet intervention	8 weeks	N = 209; % Female = 100	RCT, intervention arm	Website logs
Martey et al. (2014)	US	To examine the relationships among different measures of engagement.	Healthy adults	Digital game	N/A	Study 1: N = 280; Mean age = 21; % Female = 59 Study 2: N = 480;	Experimental, between-subjects design	Questionnaires, electro-dermal activity, mouse clicks, and mouse movement

McCabe & Price (2009)	Australia	To evaluate the dropout rate for an internet-based intervention for erectile dysfunction.	Erectile dysfunction	Website	12 weeks	Mean age = 19.5; % Female = 65 N = 44; % Female = 0	RCT	Questionnaires
McCambridge et al. (2011)	UK	To determine whether differences in length and relevance of follow-up questionnaires have an impact on loss to follow-up.	Alcohol users	Website	12 months	N = 8,060	RCT	Questionnaires
McClure et al. (2013)	US	To explore the effect of four design features on engagement with an internet-based smoking cessation programme.	Smokers	Website	8 weeks	N = 1865; Mean age (SD) = 44.2 (14.7); % Female = 63	Multiphase optimization strategy trial	Website logs
Meischke et al. (2011)	US	To determine the characteristics of parents who engage with an internet-based health intervention for their children.	Parents to children with asthma	Website	6 months	N = 283	RCT, intervention arm	Website logs, survey
Miller, Cafazzo, & Seto (2014)	Canada	To examine effective use of gamification design principles in developing mHealth apps.	Chronic illness	Smartphone app	N/A	N/A	Review, narrative synthesis	N/A
Mohr et al. (2013)	US	To evaluate the efficacy of telephone coaching in improving adherence to MoodManager.	Depression	Website	12 weeks	N = 101	RCT	Website logs
Morris et al. (2015)	US	To introduce and evaluate a web-based, peer-to-peer cognitive reappraisal platform.	Depression	Website	3 weeks	N = 166; Mean age (SD) = 23.7 (5.3); % Female = 72	RCT	Website logs, questionnaires
Morrison & Doherty (2014)	UK	To conduct an exploration of the use of visualisations of log data to improve understanding of engagement with web-based interventions.	Depression	Website	N/A	N = 326	Secondary analysis of cohort data	Website logs
Morrison et al. (2014)	UK	To examine the effect of two different design features (tailoring and self-assessment) on engagement.	Mild bowel problems	Website	N/A	Study 1: N = 24; Median age = 25; % Female = 67	Qualitative	Interviews

						Study 2: N = 178; Mean age (SD) = 30.2 (11.7); % Female = 78	Partial factorial design	Website logs
Murray et al. (2013)	UK	To assess whether adherence and retention are related.	Alcohol users	Website	12 weeks	N = 7,932; Mean age (SD) = 38.0 (11.0); % Female = 57	Secondary analysis of RCT data	Website logs, questionnaires
Neve et al. (2010)	Australia	To describe the prevalence and predictors of dropout and non-usage attrition in a web-based weight loss programme.	Overweight individuals	Website	12 months	N = 9,599; Mean age (SD) = 35.7 (9.5); % Female = 86	Cohort	Website logs
Nicholas et al. (2010)	Australia	To explore reported reasons for non-adherence to an online psycho-education programme.	Bipolar disorder	Website	8 weeks	N = 39; % Female = 56	RCT; Qualitative	Website logs; Interviews
O'Brien & Toms (2008)	Canada	To conceptually and operationally define engagement with technology.	Healthy adults	Technology	N/A	N = 17; % Female = 59	Review, narrative synthesis; Qualitative	Face-to-face interviews
O'Brien & Toms (2010)	Canada	To develop an engagement scale.	Healthy adults	Website	N/A	Study 1: N = 440; % Female = 69	Instrument development and validation	Questionnaires
						Study 2: N = 802; % Female = 70		
Oh & Sundar (2015)	US	To explore the effect of two different interactivity types (modality and message) on website engagement.	Healthy adults	Website	N/A	N = 167; Mean age = 19.6; % Female = 58	Experimental, between-subjects design	Questionnaires
Oinas-Kukkonen & Harjumaa (2009)	Finland	To describe a framework for the design and evaluation of Persuasive Systems.	N/A	N/A	N/A	N/A	Review, narrative synthesis	N/A
Park et al. (2010)	US	To examine the effect of exposure to a pre-game story on the feeling of presence during gameplay.	Healthy adults	Digital game	N/A	Study 1: N = 30; % Female = 80	Experimental, between-subjects design	Questionnaires
						Study 2: N = 24; % Female = 58		
Parks (2014)	US	To outline important design considerations in online positive psychological	Healthy adults	Website	N/A	N/A	Review, narrative synthesis	N/A

Peels et al. (2012)	The Netherlands	interventions. To assess user characteristics associated with participation and attrition in web-based and print-based tailored physical activity interventions.	Aging population	Website	12 weeks	N = 1,729; Mean age = 48.3 % Female = 52	Cluster RCT	Questionnaires
Poirier & Cobb (2012)	US	To examine the association between social ties and engagement with a health and wellness online intervention.	Healthy adults	Website	4 weeks	N = 84,828; % Female = 84.	Cohort	Website logs
Postel et al. (2011)	The Netherlands	To examine attrition prevalence and pre-treatment predictors of attrition in a sample of open-access users of a Web-based program.	Problem drinkers	Website	3 months	Study 1: N = 780; Mean age (SD) = 47.5 (10.8); % Female = 54 Study 2: N = 144; Mean age (SD) = 45.8 (9.7); % Female = 58	Cohort (Study 1), RCT (Study 2)	Website logs
Richardson et al. (2010)	US	To measure the effect of adding online community features to an Internet-based walking program on attrition and average daily step counts.	Sedentary adults	Website	16 weeks	N = 324; Mean age (SD) = 52.0 (11.4); % Female = 66	RCT	Step counts, website logs
Richardson et al. (2013)	US	To examine the effectiveness of a Web-based smoking cessation intervention, to identify the most effective features, and to gain insight into who is most likely to use those features.	Smokers	Website	1 month	N = 1,033, % Female = 52	Cohort	Website logs
Ritterband et al. (2009)	US	To propose a model to help guide future development of online interventions and to predict and explain behavior change afforded by online interventions.	N/A	Internet interventions	N/A	N/A	Review, narrative synthesis	N/A
Sainsbury et al. (2015)	Australia	To assess the acceptability of an online intervention to improve diet adherence in coeliac disease and to examine	Coeliac disease	Website	N/A	N = 189	RCT	Completion of follow-up assessment

the relationships with participant characteristics, attrition, and effectiveness.

Schønau-Fog & Bjørner (2012)	Denmark	To propose a method that can be used to empirically investigate the experience of wanting to continue playing.	Healthy adults	Digital game	N/A	N = 30	Qualitative	Interviews
Schubart et al. (2011)	US	To review what factors influence user engagement in Internet-based behavioral interventions for chronic illness.	Chronic illness	Internet-based interventions	N/A	N/A	Systematic review, narrative synthesis	N/A
Schwarzer & Satow (2012)	Germany	To predict smoking abstinence in internet users who engage with a virtual community.	Smokers	Virtual community	10 weeks	N = 13,174	Cohort	Website logs
Sharek & Wiebe (2014)	US	To investigate a novel technique for measuring video game engagement by capturing behavioral data without interfering with the main task.	Healthy adults	Digital game	N/A	N = 156; Mean age (SD) = 30.8 (10.2); % Female = 58	Experimental, between-subjects design	Game-clock clicks
Shaw et al. (2014)	US	To describe how fidelity recommendations may be applied in mobile phone interventions for weight loss.	Overweight individuals	Mobile phone	N/A	N = 261	Review, narrative synthesis	N/A
Short et al. (2015)	Australia	To propose a new model of user engagement that can be used to guide the development and evaluation of online behaviour change interventions.	N/A	Online interventions	N/A	N/A	Review, narrative synthesis	N/A
Stark et al. (2011)	US	To describe dietary self-monitoring rates among participants randomised to the intervention arms of two pilot studies.	Dialysis patients	Electronic diary	16 weeks	Study 1: N = 22; Mean age = 56; % Female = 40	RCT, intervention arm	Website logs
Steinberg et al. (2014)	US	To examine patterns and predictors of self-monitoring adherence and the association	African-American women with	Interactive voice response	12 months	N = 185; Mean age (SD) =	RCT	IVR completion

		between adherence and weight change in an online intervention.	low income			35.4 (5.5) % Female = 100		
Strecher et al. (2008)	US	To determine whether engagement in a web-based smoking cessation intervention predicts 6-month abstinence, whether particular groups are more likely to engage, and whether particular components influence engagement.	Smokers	Website	6 months	N = 1,866; Mean age = 46.3; % Female = 60	Fractional factorial design with 16 arms	Website logs
Ubhi et al. (2015)	UK	To conduct a preliminary evaluation of the effectiveness of a novel smoking cessation smartphone application.	Smokers	Smartphone application	28 days	N = 1,170 % 16-29 years = 50.4 % 30-49 years = 45.4 % 50+ years = 4.2 % Female = 64.5	Observational prospective cohort	Automated recording logins, time spent, page views
VanDeMark et al. (2010)	US	To describe the characteristics of participants in the E-TREAT intervention, and to examine the characteristics that predict active engagement.	Substance use disorder	Website	3 months	N = 157; Mean age (SD) = 36.6 (9.7); % Female = 52	Cohort	Contact log
Van den Berg et al. (2006)	The Netherlands	To assess engagement with an Internet-based physical activity intervention with individual supervision.	Rheumatoid arthritis	Web-based	12 months	N = 82; Median age (IQR) = 49.5 (12.9); % Female = 76	RCT, intervention arm	Website logs
Vandelanotte et al. (2007)	Australia	To review outcomes of web-based physical activity interventions and to identify relationships of intervention components with behavioural outcomes.	Healthy adults	Website	N/A	N = 4,845	Systematic review, narrative synthesis	N/A
Voils et al. (2014)	US	To present approaches to inform intervention duration, frequency, and amount when 1) the researcher has no a priori expectation, and 2) when the researcher does have	N/A	N/A	N/A	N/A	Review, narrative synthesis	N/A

Wang et al. (2012)	US	an a priori expectation. To examine the mediating role of adherence to self-monitoring of diet and physical activity on weight loss in an online trial.	Overweight individuals	Web-based	12 months	N = 210; Mean age (SD) = 46.8 (9.0); % Female = 85	RCT	Usage data
Wanner et al. (2010)	Switzerland	To assess and compare user characteristics and adherence to Active Online in an open access context over time and between trial participants and open access users.	Healthy adults	Website	6 weeks	Study 1: N = 836; Mean age = 43.1; % Female = 75 Study 2: N = 5,084; Mean age = 38.4; % Female = 50	RCT (Study 1), cohort (Study 2)	Website logs
Webber et al. (2008)	US	To examine the relationships between motivation, adherence, and weight loss in an online behavioral weight-loss intervention.	Overweight individuals	Website	16 weeks	N = 66; Mean age (SD) = 50.1 (9.9); % Female = 100	RCT	Website logs
West & Michie (2016)	UK	To provide guidance on the development and evaluation of digital behaviour change interventions in healthcare.	N/A	N/A	N/A	N/A	Review	N/A
Weston et al. (2015)	UK	To investigate measurements of engagement using a health-based quiz app.	Healthy adults	Smartphone app	N/A	N = 29; Age range= 21-56; % Female = 59	RCT	Usage data
Whiteside et al. (2014)	US	To get user feedback on messaging content intended to engage suicidal individuals.	Suicidal individuals	Web-based	N/A	N = 34; % Female = 68	Cross-sectional	Survey
Zhou (2013)	China	To identify factors associated with the initial adoption of mobile games.	Healthy adults	Mobile phone	N/A	N = 231 % Female = 37	Cross-sectional	Survey