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Does narrative information bias individual's decision making? A systematic review[☆]

Anna Winterbottom^{a,*}, Hilary L. Bekker^b, Mark Conner^a, Andrew Mooney^c

^a Institute of Psychological Sciences, School of Medicine, University of Leeds, Leeds, West Yorkshire LS2 9JT, United Kingdom

^b Institute of Health Sciences, School of Medicine, University of Leeds, Leeds, LS2 9LJ, West Yorkshire, United Kingdom

^c Adult Renal Services, St James's University Hospital, Leeds, LS9 7TF, West Yorkshire, United Kingdom

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ABSTRACT

Including narratives in health-care interventions is increasingly popular. However, narrative information may bias individual's decision making, resulting in patients making poorer decisions. This systematic review synthesises the evidence about the persuasiveness of narrative information on individuals' decision making. Seventeen studies met the review criteria; 41% of studies employed first person narration, 59% third person. Narrative information influenced decision making more than the provision of no additional information and/or statistically based information in approximately a third of the studies (5/17); studies employing first person narratives were twice as likely to find an effect. There was some evidence that narrative information encouraged the use of heuristic rather than systematic processing. However, there was little consistency in the methods employed and the narratives' content to provide evidence on why narratives affect the decision process and outcome, whether narratives facilitate or bias decision making, and/or whether narratives affect the quality of the decision being made. Until evidence is provided on why and how narratives influence decision making, the use of narratives in interventions to facilitate medical decision making should be treated cautiously.

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Introduction

Patients are encouraged to participate in the decision making and management of their healthcare (The NHS plan, 2000). Many medical decisions are complicated and can be difficult to make especially when the decision is emotive, involves risk, is time pressured (Bekker et al.,

1999; O'Connor, Stacey, et al., 2003), and/or when the decision is 'preference sensitive', and there is no single best medical treatment option available (O'Connor, Légaré, 2003; Wennberg, Fisher, & Skinner, 2002).

Decision aids are interventions designed to help patients make deliberate choices between two or more treatment options (O'Connor, Stacey, et al., 2003). There is evidence for the effectiveness of decision aid interventions to facilitate patient decision making (Bekker et al., 1999; O'Connor, Stacey, et al., 2003). Typically decision aids include accurate and up to date treatment information and techniques to encourage patients to assimilate this information with their own values and preferences (Bekker et al., 1999; O'Connor, Stacey, et al., 2003). However, there is considerable variation in the content of these complex interventions and it remains unclear what components of the decision aid are the 'active ingredients' in facilitating

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* Corresponding author. Tel.: +44 (0) 113 343 2726.

E-mail addresses: anna@winterbottom.co.uk (A.E. Winterbottom), h.l.bekker@leeds.ac.uk (H.L. Bekker), m.t.conner@leeds.ac.uk (M. Conner), andrew.mooney@leedsth.nhs.uk (A. Mooney).

patient decision making (Bekker, Hewison, & Thornton, 2003; Bekker et al., 1999; Charles, Gafni, Whelan, & O'Brien, 2005; Elwyn et al., 2006).

Increasingly treatment information in decision aids is being presented as patient narrative rather than as factual information (Elwyn et al., 2006; Feldman-Stewart et al., 2006). Reviews of the content of decision aids found that anywhere between 20 and 74% of decision aids contain examples of other patient's experience of having the health condition and/or choosing treatment options, in the form of testimonials or accounts presented in the first and third person (Feldman-Stewart et al., 2006; O'Connor, Stacey, et al., 2003). The patient experience, and use of narratives, is an established part of medical training and clinical skills acquisition (Chisholm & Askham, 2006; Ubel, Jepson, & Baron, 2001). In addition, patient narratives may help people make sense of and cope with their (ill) health (Herxheimer & Ziebland, 2004). What is unclear is the appropriateness of patient narratives in interventions designed to help patients make good decisions about treatment options and illness management. At present there is considerable variation in the length, breadth and content of narratives included in decision aids, and it is unclear how narratives are balanced to provide an appropriate range of the patient's experience (Khangura, Bennett, Stacey, & O'Connor, 2008).

Decision aids work, in part, by presenting balanced information about the advantages and disadvantages of all the treatment options in a way that enables individuals to process this information without bias. Decision aids encourage patients to evaluate systematically more of the decision-relevant information in accord with their own beliefs and emotions, compared to those making the same decision unaided (Bekker et al., 2003). The use of narratives within decision aids may reduce the effectiveness of decision aids to facilitate informed decision making by a) biasing the presentation of information, and b) discouraging individuals to evaluate systematically the decision-relevant information (Beyerstein, 2001). When patient narratives are used, it is unlikely that all the possible consequences of the decision alternatives are represented by the story (Butow, Fowler, & Ziebland, 2005). Decision aids are more likely to include narratives where the patient is satisfied with their decision (Khangura et al., 2008). Presenting more information about one type of consequence is directive (Kessler, 1992). In addition, it is likely that patient narratives encourage the use of heuristic processing. Processing information heuristically relies on the use of 'rules of thumb' based on an individual's past experiences and observations (Chaiken, 1980). In such circumstances, the context of the message, such as who is delivering the information, is more influential in decision making than the message content, such as information about the risks and benefits of treatment options (Chaiken, 1980). Individuals may well be persuaded by others' stories because of a characteristic of the narrator rather than the content of the message, although this is an empirical question.

Defining narrative information

Most research exploring the role of narratives in persuasion and decision making has been carried out with

student populations (Morman, 2000) in non-medical contexts such as consumer research (Dickson, 1982). Several terms for the same phenomenon are used including narratives (Green & Brock, 2000), exemplars (Brosius, 1999), anecdotal evidence (Slater & Rouner, 1996), testimonial evidence (Ubel et al., 2001) and case histories (Dickson, 1982). Further, there is no clear definition and/or operationalisation of narrative information within the literature, although many have been proposed (Baesler & Burgoon, 1994; Green & Brock, 2000; Reinard, 1988; Slater, 2002), and no guidance on length and/or content of the narrative (Khangura et al., 2008). Often narratives contain multiple messages such as the causes and consequences of illness and treatment seeking behaviour (Cody & Lee, 1990; Wilson, Mills, Norman, & Tomlinson, 2005), available treatment options and their consequences for the individual (Fagerlin, Wang, & Ubel, 2005; Ubel et al., 2001, Study 1, Study 2). Typically, narratives are story-like prose pieces that 'focus on elaborating one example of an event, and they provide appealing detail, characters, and some plot' (Greene & Brinn, 2003), presented in either the first or third person (Lee & Leets, 2002). This review will use the term narrative, specifically to denote:

- First Person Narrative – an account of an individual's experience conveyed in the first person often called testimonial evidence; for example, 'I was diagnosed with stomach cancer 3 years ago and I discovered that I had a number of treatment options available to me...'
- Third-Person Narrative – an account of an individual's experience conveyed in the third person; for example, 'David was diagnosed with hypertension 18 months ago and was told that there were two treatment options available to him...'

Previous summaries of narrative-based empirical research

Scoping the literature identified three previous reviews of the primary empirical evidence assessing the persuasive effects of narrative information on decision making: Allen and Preiss (1997), Reinard (1988), and Taylor and Thompson (1982). The aims of the reviews were to compare the effect of information presented as narratives compared to other forms of evidence, e.g. statistics, in a range of contexts on individual's judgment. There appear to be discrepancies between the reviews' conclusions with Reinard (1988) and Taylor and Thompson (1982) finding support for the persuasiveness of narrative information, and Allen and Preiss (1997) the persuasiveness of statistical information. However, these differences in conclusions are attributable to variations in the aims of the review, the inclusion criteria of studies, and the methods used to synthesise the data. For example, Allen and Preiss' (1997) review did not include studies examining the base rate fallacy – where individuals are prone to making biased judgments based on information about the characteristics of the general population – but did conduct a robust statistical synthesis of the studies' findings, whereas Reinard (1988) included more heterogeneous studies using text to synthesise the studies' findings.

Additional analyses were carried out by two of these reviews (Reinard, 1988; Taylor & Thompson, 1982) to identify some of the mediating and moderating variables that may explain the persuasiveness of narratives including: the type of language included in the message (Borgida, 1979; Reyes, Thompson, & Bower, 1980); information format (Borgida, 1979; Nisbett & Borgida, 1975); direct experience (Borgida & Nisbett, 1977; Tyler, 1980); credibility of information source (Bettinghaus, 1953; Fillion, 1972; Warren, 1969); probative force (Blumer, 1986; Hample, 1977, 1978; Wall, 1972); quality (Cacioppo, Petty, & Morris, 1983; Petty & Cacioppo, 1984; Petty, Harkins, & Williams, 1980); amount of evidence (Petty & Cacioppo, 1984; Ryland, 1973); novelty and recency (McCroskey, 1967; Wyer, 1970); speaker characteristics like speaker bias (Hunt, 1972) and speaker credibility (Anderson, 1970; Bradley, 1981); audience characteristics like need for cognition and engagement with topic (Cacioppo et al., 1983), prior attitude and familiarity (Cacioppo et al., 1983; Petty & Cacioppo, 1984), and critical thinking ability (Whitehead, 1971).

Few consistent patterns were observed by the authors of the reviews to explain the persuasiveness of narrative information. All three reviews highlight the need for more robust studies to examine narratives, their impact on judgments and decision making, and the associated moderating and/or mediating mechanisms. Given the interest in using narratives as part of evidence-based interventions to facilitate patient decision making (Feldman-Stewart et al., 2006), the evidence about the persuasiveness of narrative information needs to be re-evaluated with this application in mind. This review aims to integrate the evidence exploring the use of narrative information and impact on individual's decision making in the context of health and medicine. The objectives are:

- To classify the different narrative types used in primary empirical research.

- To synthesise findings about the differential effect of narrative type on decision making in the health context.
- To identify the factors that explain the effect of narratives on decision making.

Methods

Design

A survey of primary empirical research employing a systematic review method.

Search strategy

Two search strategies were developed with reference to the review aims, CRD (2001) guidelines, keywords of target articles, and the University of Leeds librarians' expertise to identify articles from a) medical and psychological, and b) communications-based websites electronic databases. The search strategies included the following terms: [decision making – decision, persuasion, judgment] + [narrative type – testimonial, anecdote, story] + [study design – meta-analysis, qualitative] (contact authors for search strategy). This broad range of terms resulted in a search strategy that was sensitive but not specific (Fig. 1).

Identification of articles

Articles were identified from: electronic databases; hand-searching key journals; complete search of reference lists of all articles included in this and prior reviews; reference list of a relevant unpublished doctoral thesis (Reinhart, 2006); key authors contacted to request articles; author search in Google Scholar. The electronic databases searched were: Medline (1966 to August 2007); PsycINFO (1806 to August 2007) and Communication Abstracts electronic database (1977 to August 2007). The hand-searched

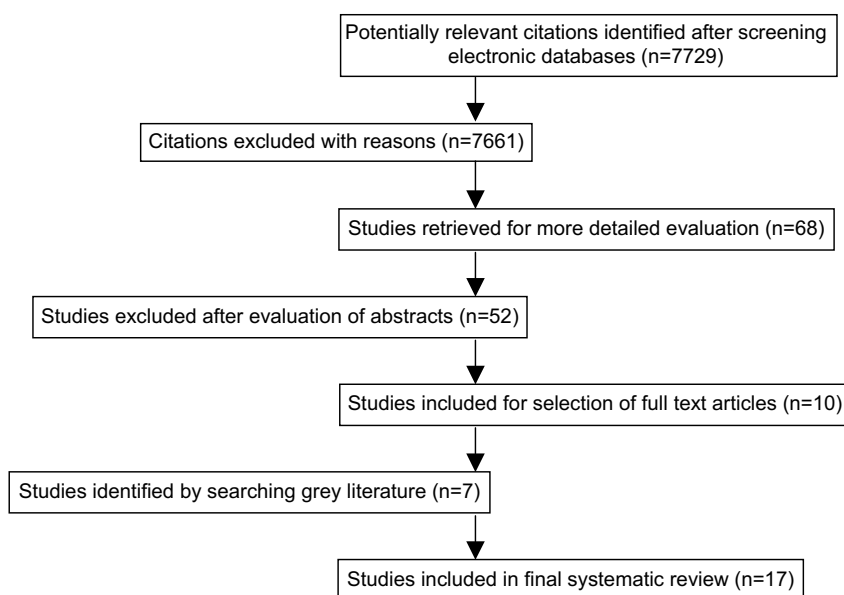


Fig. 1. Flow diagram of study selection process.

journals were: The Journal of Behavioural Decision Making (1996 to August 2007), Medical Education Journal (1997 to August 2007) and Medical Decision Making (1995 to August 2007).

Inclusion and exclusion criteria

The inclusion and exclusion criteria were defined in terms of the population, intervention, outcome measures and study design, of relevance to the review aims (CRD, 2001). At least 20% of decisions about the inclusion and exclusion of articles were discussed between all authors and revisions made to the inclusion and exclusion criteria where necessary. Studies were included if their primary aim was to measure the role of first or third-person narrative evidence in decision making in a health context; if they required participants to make a real or hypothetical decision or behaviour; the narrative was in the form of first or third person; if the study included a comparison of information presented in a narrative format compared to another format, e.g. statistical evidence. Studies were also included if they employed an experimental design and/or were randomised controlled trials, before and after studies or cohort studies; contained an adult population and were published in English. Studies were excluded if they were non-experimental, case methodologies, discussion and/or review papers; included proxy decision making (decision making by an individual for another); where the studies primary aim was to manipulate the content of the message e.g. message framing. The broad range of search terms meant that the majority of studies were eliminated because they did not include a comparison of information presented in a narrative format compared to another format, e.g. statistics.

Data elicitation form

A data elicitation form was developed and applied systematically to all articles included in the review (contact first author for copies). The form required information about: article characteristics (authors, research location); study characteristics (theoretical framework, design, sample); narrative type (first, third); study measures (preference, vividness and attitude/belief); a summary of findings. A judgment about the research quality of the study was made based on sample size, sampling procedure, timing, validation of measures, consistency between study aims, methods, results and conclusions, and causes concern. If the judgment was 'yes, there was evidence to support this research method point', the point scored 1, if 'no' then -1, and zero for 'unclear or not relevant'; the possible range of total research quality score was -7 to +7 (Collins, Bekker, & Dodwell, 2004).

Procedure and analysis

All abstracts and titles identified by the search strategies were evaluated with reference to the review's inclusion and exclusion criteria. Full manuscripts were retrieved for abstracts that met the inclusion criteria, had no abstract,

and in which the abstract information was insufficient to make a judgment about inclusion. The coding frame was applied to all manuscripts that met the inclusion criteria. Data elicited by the coding frame were managed by the Statistical Package for the Social Sciences (SPSS Version 14). As the study designs and findings were too heterogeneous to integrate statistically, findings are synthesized using descriptive statistics and text. The studies are reviewed in detail by narrative type (first person narrative or third-person narrative) and the results structured to address the following:

- Do first or third-person narratives bias individuals' decision making?
- What factors have been investigated that might explain the influence of testimonial and/or narrative information on decision making?

Results

Seventeen studies were included in the review; 41% included first person, 59% third person (Tables 1 and 2). Most were carried out in North America, employed an experimental design, a student sample, referred to a theory, and included third-person narratives; all were in the context of medicine and health, and almost two-thirds presented hypothetical decisions scenarios (Tables 1 and 2). In total five studies demonstrated an effect of narratives on individual's preferences and/or decision making (Fagerlin et al., 2005, Study 1; Rook, 1987, Study 1, Study 2; Ubel et al., 2001, Study 1, Study 2). Seven studies assessed the impact of first person narratives, ten on third-person narratives. Ten studies assessed variables to explain the effect of narrative information on decision making (Cox & Cox, 2001, Study 1, Study 2; Greene & Brinn, 2003; Kopfman, Smith, Ah Yun, & Hodges, 1998; Morman, 2000; Rook, 1986, 1987, Study 1, Study 2, Study 3; Slater & Rouner, 1996) including: vividness, credibility of information, causal relevance, number of thoughts and feelings, prior thought and intent and affect.

The mean research quality rating for studies included in the review was 3.5 (range 2–4). There was no significant difference in quality scores by narrative type. Most studies employed an adequate sample size but the sampling was poorly described in all studies. Only one study included validated measures (Morman, 2000). All studies applied the measures at appropriate times and reported measures that were consistent with the aims, and conclusions consistent with results.

Do first person narratives influence decision making?

Seven studies contained first person narrative evidence on health related testimonials in angina surgery, testicular self-examination, polio vaccination and skin cancer prevention (Cody & Lee, 1990; Fagerlin et al., 2005, Study 1, Study 2; Morman, 2000; Ubel et al., 2001, Study 1, Study 2; Wilson et al., 2005). Five studies included written testimonials (Fagerlin et al., 2005, Study 1, Study 2; Morman, 2000; Ubel et al., 2001, Study 1, Study 2), one a videotaped

Table 1
Summary of primary empirical research studies including 'real' decision making scenarios included in the review

Authors	Sample size (s)	Sample type	Location	Narrative type	Decision type	Study design	Theory	Aim	Measures
Cody and Lee (1990)	312	Students	Australia	First person	Real	Follow-up survey	Health belief model	To assess the effectiveness of emotional and informational skin cancer prevention video messages on health beliefs, intentions and behaviour	Intentions and behaviour, perceptions of severity, behaviour, susceptibility, benefits, barriers
Greene and Brinn (2003)	141	Students	USA	Third	Real	Experimental	Health belief model	To examine the role of statistical and narrative messages on perceived susceptibility to skin cancer	Credibility, risk, intentions, susceptibility, behaviour, efficacy, threat, personality factors
Morman (2000)	80	Students	USA	First	Real	Experimental	Extended parallel process model	To examine which types of evidence might influence attitudes and intention to perform testicular self-examination (TSE)	Attitudes, fear arousal, beliefs, efficacy, masculinity and humiliation
Rook (1987)	3rd study - 40	General population	USA	Third	Real	Follow-up survey	Vividness effect	To examine the persuasive effects of narrative on a health promotion message in a community sample	Attitudes, affect, recall and behaviour
Sherer and Rogers (1984)	80	Students	USA	Third	Real	Follow-up survey	Vividness effect	To investigate the persuasive effects of three types of vivid information frequently used in fear appeals, emotional interest, concreteness and proximity	Vividness, causal relevance, efficacy, vulnerability, beliefs about noxiousness
Slater and Rouner (1996)	218	Students	USA	Third	Real	Experimental	Elaboration likelihood model	To examine value relevant messages by value affirmative and value protective recipients in narrative and statistical messages	Credibility, no. of thoughts and emotions, attitudes, risk perception, behaviour
Wilson et al. (2005)	71	Students	Canada	First	Real	Experimental	Vividness effect	To examine whether narrative or evidence-based information about polio vaccination would influence the beliefs of medical students	Attitudes

Table 2
Summary of primary empirical research studies including 'hypothetical' decision making scenarios included in the review

Authors	Sample size (s)	Sample type	Location	Narrative type	Decision type	Study design	Theory	Aim	Measures
Cox and Cox (2001)	1st study – 174 2nd study – 14	General population	USA	Third	Hypothetical	Experimental	Message framing	To examine the effect of message framing on the persuasiveness of statistics and narrative health messages	Causal relevance, beliefs, risk perception, evaluation of advertisement
Fagerlin et al. (2005)	1st study – 613 2nd study – 875	General population	USA	First	Hypothetical	Experimental	None	To examine whether graphical representations of statistics will reduce the influence of testimonial information on decision making	Decision
Kopfman et al. (1998)	90	Students	USA	Third	Hypothetical	Experimental	Heuristic Systematic Model	To examine the cognitive and affective responses to organ donation messages	Anxiety, credibility, causal relevance, no. of thoughts and emotions, prior thought and intent
Rook (1986)	80	Students	USA	Third	Hypothetical	Experimental	Vividness effect	To examine the persuasiveness of abstract and concrete data on osteoporosis messages in women of different ages.	Credibility, attitudes, recall, intentions
Rook (1987)	1st study – 48 2nd study – 20	General population	USA	Third	Hypothetical	Experimental	Vividness effect	To examine the persuasive effects of narrative on health promotion messages in student and community samples	Behavioural intentions and attitudes, affect, credibility impact on behaviour
Ubel et al. (2001)	1st study – 537 2nd study – 593	General population	USA	First	Hypothetical	Experimental	None	To examine the persuasive effects of patient testimonials in the context of hypothetical medical decisions	Decision

testimonial (Cody & Lee, 1990) and one verbal testimonial (Wilson et al., 2005).

Three studies provided evidence that first person narrative evidence has a persuasive effect on individual's decision (Fagerlin et al., 2005, Study 1; Ubel et al., 2001, Study 1, Study 2). Narrative information influenced hypothetical decision making about angina regardless of the number of narratives (Fagerlin et al., 2005, Study 1; Ubel et al., 2001, Study 1) or the number of arguments presented for and against a treatment option when compared with the statistical information (Ubel et al., 2001, Study 2). However, providing a pictograph or pictorial representation alongside the statistics reduced the persuasive effect of first person narrative evidence on treatment choice (Fagerlin et al., 2005, Study 2). Three studies found statistical and narrative evidence to be equally persuasive in producing favourable attitudes and intentions to perform testicular self-examination (Morman, 2000), polio vaccination (Wilson et al., 2005), and prevention of skin cancer (Cody & Lee, 1990). No differences were found in attitudes to polio vaccination in medical students, although 25% were less likely to recommend the vaccination after being exposed to either epidemiological or narrative evidence compared to the control group (Wilson et al., 2005). Morman (2000) reported that both statistical and testimonial evidence were able to produce favourable attitudes and intentions to perform testicular self-examination. No differences in the relationship between message type and efficacy, fear, threat or learning were found. Although self-reported intentions to carry out skin examinations in both testimonial and statistical groups were significantly higher than those of a control group. No differences in intention and behaviour were observed when individuals were presented with testimonial or statistical videos about skin cancer (Cody & Lee, 1990).

Do third-person narratives influence decision making?

Ten studies contained third-person narratives in health contexts such as: osteoporosis, organ donation, alcohol consumption, mammography screening and skin protection behaviour (Cox & Cox, 2001, Study 1, Study 2; Greene & Brinn, 2003; Kopfman et al., 1998; Rook, 1986, 1987, Study 1, Study 2, Study 3; Sherer & Rogers, 1984; Slater & Rouner, 1996). All third-person narratives were written. Two studies provided evidence for the persuasive effects of third-person narrative on decision making when compared with statistical information in the context of attitudes to osteoporosis in women (Rook, 1987, Study 1, Study 2). One study found both statistical and narrative messages were better compared to no message, in decreasing intention to tan and increasing perceived susceptibility to skin cancer (Greene & Brinn, 2003). Seven studies found both narrative and statistical messages to be persuasive under certain conditions (Cox & Cox, 2001, Study 1, Study 2; Kopfman, et al., 1986; Rook, 1986, 1987, Study 3; Sherer & Rogers, 1984; Slater & Rouner, 1996). In the context of organ donation messages, statistical messages produced greater scores on all of the cognitive variables measured, and narratives produced greater results on all of the affective variables. Statistical information produced both peripheral

and systematic processing of the message, in that it generated more total thoughts, more positive thoughts and had greater perceived causal relevance than the narrative evidence, whilst there was no evidence of systematic processing of narrative information. The study also found that those with low prior thought and intent about the message topic, rated messages to be less credible, effective, or causally relevant and demonstrated higher levels of anxiety than those with high prior thought and intent; and that contrary to predictions, statistical information was rated as more causally relevant and participants felt more 'similar' to those in the information presented in the statistical message (Kopfman et al., 1996). Framing effects were shown to mediate the impact of evidence type on messages about mammography screening (Cox & Cox, 2001, Study 1, Study 2). Women who were exposed to high involvement narrative messages about mammography screening reported loss framed narrative information as having significantly more informational value, and produced more positive attitudes than statistical messages. Framing had no effect on attitudes for those exposed to statistical messages (Cox & Cox, 2001, Study 1). Interviews with women ($n = 14$) of a similar age group revealed that these seemingly incongruous results occur because gain framed messages do not provide strong arguments that encourage women to engage in mammography screening. Loss framed messages however, are more able to persuade individuals to engage in mammography screening despite it being perceived as incurring some short term discomfort (Cox & Cox, 2001, Study 2). In the context of alcohol use, those individuals who were 'value protective' whereby value discrepant messages served to reinforce existing values, responded more positively to narrative messages than statistical messages and rated the messages to be more persuasive, believable and of better written quality. In contrast, those individuals who were 'value affirmative' whereby value congruent messages reinforced their existing values, were more likely to use statistical messages to affirm their beliefs and rated these messages to be of higher quality (Slater & Rouner, 1996). Third-person narrative information was rated as more serious than statistical information, although it did not influence women's recall of information or actual health seeking behaviour about osteoporosis (Rook, 1986, 1987, Study 3). Narrative and statistical evidence did not influence intention to consume alcohol, but narrative information did affect beliefs about the 'noxiousness' of excessive drinking and produced more accurate recall of information. Under some conditions, proximity of the information and emotional interest did predict intentions, for example, narrative information was mediated by the effect of the proximity of the information on intentions to abstain from alcohol use, over time (Sherer & Rogers, 1984).

What factors have been investigated to explain the persuasiveness of narrative information?

The two most common variables assessed to explain the persuasiveness of narrative information were vividness of information (Rook, 1986, 1987, Study 1, Study 2, Study 3; Sherer & Rogers, 1984; Wilson et al., 2005) and/or the perceived credibility of the message content and/or

credibility of the speaker of the message, presented. Three mechanisms have been used to explain how the vividness of narratives affects decision making: increasing the emotional interest, proximity, and/or concreteness of the information (Nisbett & Ross, 1980). Only one study operationalised adequately these three aspects of vividness (Sherer & Rogers, 1984), which may account for the discrepancies of the studies' findings; two reported support (Rook, 1987, Study 1, Study 2), four found no support (Rook, 1986, 1987, Study 3; Wilson et al., 2005), and one found mixed support (Sherer & Rogers, 1984) for vividness as mediator of the persuasiveness influence of narrative information on decision making.

There was mixed evidence for the effect of credibility mediating the persuasiveness of narratives. The variable was operationalised in a variety of different ways, the credibility and expertise of the message (Kopfman et al., 1998), a believability index (Sherer & Rogers, 1984), realism (Greene & Brinn, 2003), and the informational value of the message (Cox & Cox, 2001, Study 1; Rook, 1986, 1987, Study 1, Study 2, Study 3). A series of five studies (Cox & Cox, 2001, Study 1; Rook, 1986, 1987, Study 1, Study 2, Study 3) found no support for the credibility of the evidence. Two studies reported statistical evidence as being perceived to be more credible (Kopfman et al., 1998; Slater & Rouner, 1996) and one study reported that narratives were rated more realistic, but realism did not mediate measures of mental effort or message reflectiveness (Greene & Brinn, 2003).

Other variables measured to explain the persuasive effects of narrative were: varying the number of testimonials presented for and against a treatment option (Ubel et al., 2001, Study 2); framing effects mediating the impact of evidence type on mammography screening messages (Cox & Cox, 2001, Study 1, Study 2); the strength of the argument presented mediating the effects of evidence about alcohol use (Slater & Rouner, 1996); statistics presented with a pictograph to reduce the persuasive effect of first person narratives about treatment options (Fagerlin et al., 2005, Study 2); and prior measures of thought and intention about organ donation messages (Kopfman et al., 1998).

Discussion

This review of 17 studies investigated the effect of narrative information on individual's decision making; 41% included first person, 59% third person. The synthesis of results suggests only limited evidence for the influence of narratives on individual's decision making (5/17 studies) compared to the provision of no additional information and/or statistically based information. Studies using first person narratives were more than twice as likely to find an effect as those using third-person narratives (43% versus 20% respectively).

The review aimed to identify mechanisms to explain the persuasiveness of narrative information on individual's decision making. Most studies were not designed to explore explicitly how or why narrative information affected decision making and/or evaluate whether narrative information leads to biased or poorer decision making. Similar mediator/moderator variables to those described in

previous reviews were identified: vividness, credibility of sources, framing, use of heuristics, and attitude strength. Narratives might change the mental representations of a decision problem; however, studies exploring the vividness hypothesis are inconclusive about whether or not they enable better storage and/or retrieval of information. This finding is analogous with Taylor and Thompson's (1982) review, but, unlike Pornpitakpan's (2004, Study 1) review, there was little support linking credibility of information source with persuasiveness. Some evidence was provided suggesting narrative information may affect decision making by encouraging the use of underutilization heuristics, where individuals are inclined to rely more heavily on information presented from an individual's point of view than from statistics that are representative of a larger population (Fagerlin et al., 2005, Study 2). There was some evidence that narratives may influence affective mechanisms rather than cognitive processes, suggesting the employment of heuristic rather than systematic screening strategies (Kopfman et al., 1998; Slater & Rouner, 1996). Alternatively, narratives may impact on information retrieval mechanisms and make certain information easier to retrieve and/or code in memory. However, inconsistencies in studies' methodological approach and measurement of mediating/moderating variables make it difficult to identify patterns explaining why narrative information influences decision making. The quality of the studies would be improved if they were explicit about their sampling procedure and included validated measures.

Similar research in non-medical settings has produced mixed findings for the effect of narrative on decision making. Five studies including first persons narrative (Baesler, 1997; Borgida & Nisbett, 1977; Dickson, 1982; Golding, Krimisky, & Plough, 1992; Koballa, 1986) and seven including third-person narratives (Anderson, 1983, Study 1, Study 2; Baesler & Burgoon, 1994; Kazoleas, 1993; Lindsay & Ah Yun, 2003; Rook, 1987, Study 1; Sanfie & Hastie, 1998) have been identified. Of these, three first person narratives provide evidence of narrative affecting decision making, in the context of teachers attitudes towards two different teaching methods (Koballa, 1986), individual's judgments about the failure rate of domestic appliances (Dickson, 1982) and undergraduate students choosing psychology as their main subject at University (Borgida & Nisbett, 1977). Three studies provided evidence of third-person narrative effecting decision making in the context of judgments about race-times (Sanfie & Hastie, 1998), and perceived risks of fire fighting (Anderson, 1983, Study 1, Study 2). Most commonly, these studies also manipulated the 'vividness' of the information or the message credibility. Three reported support (Anderson, 1983, Study 1, Study 2; Koballa, 1986), two found no support (Baesler, 1997; Dickson, 1982), and two found mixed support (Baesler & Burgoon, 1994; Kazoleas, 1993) for vividness as mediator of the persuasiveness influence of narrative information on decision making. Credibility was operationalised in a variety of different ways, including items measuring the speaker's expertise and trustworthiness (Kazoleas, 1993), perceived message credibility (Lindsay & Ah Yun, 2003), competence and character (Baesler & Burgoon, 1994). Two studies found that credibility mediated the effects of

attitudes and evidence (Kazoleas, 1993; Lindsay & Ah Yun, 2003). However, Kazoleas (1993) found this effect only for ratings of the 'expertise' of the speaker, and not for their perceived 'trustworthiness'. Two studies reported statistical evidence as being perceived to be more credible (Kopfman et al., 1998; Slater & Rouner, 1996) and one study reported that narratives were rated more realistic, but this did not mediate measures of mental effort or message reflectiveness (Greene & Brinn, 2003). As with studies carried out in medical settings, the methodological approach, definition and operationalisation of narrative information and the measurement of mediating/moderating variables make it difficult to assess the impact of different types of information on decision making.

There was considerable variation in authors' definitions and operationalisation of narrative information; narratives differed in length and number presented. Whilst researchers ensured that they were developed rigorously, such as explicitly balancing the content (e.g. Kopfman et al., 1998), the topics covered in the narratives varied considerably, from describing the prevalence, risk factors and preventative behaviours of an illness (Rook, 1986, 1987, Study 2, Study 3), to describing the consequences of carrying out an unhealthy behaviour like drinking excessive alcohol (Sherer & Rogers, 1984). No narratives described how an individual might discuss their illness with a health professional. Such variance in their quality makes it difficult to compare across studies and draw conclusions about the impact of narrative information on decision making and/or identify their 'active' components. Those which include information about the outcome of a procedure or facts about the decision options, may impact on decision making differently from narratives which describe how individuals should reach their decision. How people respond to information may be associated with their characteristics and/or those of, or perceived to be about, the narrator (Wise, Yeob Han, Shaw, McTavish, & Gustafson, 2008). Until the affect of narratives and mediating variables are systematically explored, little can be said to explain why there are seemingly differential effects of narratives on individuals' decision making processes and outcomes. However, it seems likely that the information included in narratives is sufficient to bias the ways individuals either search for and/or process information, limiting their usefulness in interventions designed to facilitate good decision making.

Seven studies were carried out in real-world settings; the rest explored hypothetical decisions about health. Eight studies utilised student populations. It is feasible that the validity and generalisability of findings are limited by the use of student populations. However, in real-world contexts there is an ethical issue to carrying out studies that manipulate individuals' decision processes and outcomes. It is likely that hypothetical decisions are an appropriate methodological compromise for real-world contexts like health. However, research should aim to strengthen study validity by using non-student or patient populations and/or scenarios informed by current health practice. Further research is required to examine the impact of including different narrative types in hypothetical scenarios. For example, narratives may impact on decision making

differently when they are presented in the first or third person, and the optimal method for presenting narrative information may be dependent on the medical context. A better understanding of these processes would allow the application of narrative evidence to be approximately integrated into decision aid interventions and/or omitted.

Conclusions

It seems likely that narrative information does affect the individual's decision making processes and outcomes, in both health and other decision contexts. Approximately a third of the studies (5/17) found that narrative information affected the individual's decision making process and outcomes. Similar studies carried out in non-medical settings suggest evidence for the biasing effect of narrative on decision making. At present, it is unclear why narratives affect the decision making process, whether they facilitate or bias decision making and if they affect the quality, and/or outcome of the decision being made. We suggest that those designing interventions to facilitate informed decision making avoid the use of patient testimonials until there is evidence to explain what type of narrative encourages bias in information processing and decision making and which mechanisms are mediating the effect.

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* Indicates study included in the systematic review.

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