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Medical Decision Making

Combining deliberation and intuition in patient decision support

Marieke de Vries [a,b,1,*], Angela Fagerlin [c,d,e], Holly O. Witteman [e,f,g], Laura D. Scherer [c,e,h,1]

[a] Department of Social Psychology, Tilburg University, Tilburg, The Netherlands
[b] Department of Medical Decision Making, Leiden University Medical Center, Leiden, The Netherlands
[c] VA Ann Arbor Center for Clinical Management Research, Ann Arbor, USA
[d] Division of General Internal Medicine and Department of Psychology, University of Michigan, Ann Arbor, USA
[e] Center for Bioethics and Social Sciences in Medicine, University of Michigan, Ann Arbor, USA
[f] Vice-dean for education and continuing professional development, Faculty of Medicine, Laval University, Quebec City, Canada
[g] Department of Family Medicine and Emergency Medicine, Faculty of Medicine, Laval University, Quebec City, Canada
[h] University of Missouri, Department of Psychological Sciences, USA

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ABSTRACT

Objective: To review the strengths and weaknesses of deliberative and intuitive processes in the context of patient decision support and to discuss implications for decision aid (DA) design.
Methods: Conceptual review of the strengths and weaknesses of intuitive and analytical decision making and applying these findings to the practice of DA design.
Results: DAs combine several important goals: providing information, helping to clarify treatment related values, supporting preference construction processes, and facilitating more active engagement in decision making. Many DAs encourage patients to approach a decision analytically, without solid theoretical or empirical grounding for this approach. Existing research in other domains suggests that both intuition and deliberation may support decision making. We discuss implications for patient decision support and challenge researchers to determine when combining these processes leads to better outcomes.
Conclusions: Intuitive and analytical decision processes may have complementary effects in achieving the desired outcomes of patient decision support.
Practice implications: DA developers should be aware that tools solely targeted at supporting deliberation may limit DA effectiveness and harm preference construction processes. Patients may be better served by combined strategies that draw on the strengths and minimize the weaknesses of both deliberative and intuitive processes.

1. Introduction

1.1. Supporting patient decisions: current practices

In health care, individual treatment and screening decisions are often preference sensitive, involving important trade-offs. For example, available options can be equivalent in terms of medical efficacy, but involve trade-offs between length and quality of life or between comfort and efficacy of procedures. By taking individual patient values into account, treatment and screening decisions can be made so that they best fit an individual, with his/her unique situation, needs and desires [1–6]. However, putting this ideal into practice is challenging. First, clinicians have been found to be inaccurate at estimating patients' values for health states [7] and treatment options [8,9]. Moreover, in the novel, unanticipated, and emotionally charged situations that many patients face, their values and preferences are often labile or non-existent and need to be clarified [10–12]. This clarification process can be complicated, because potential outcomes and risks can be hard to verbalize and imagine, and available options often involve trade-offs that make them incommensurable [1,2].

In order to help patients make informed medical decisions that reflect their personal values and circumstances, patient decision aids (DAs) have become an increasingly common tool [5,6,13–17]. DAs combine several important goals, such as informing patients about options, helping clarify patient values, supporting patients' preference construction process, and enabling patients to more actively engage in shared decision making with their health care providers. DAs can, among other positive effects, enhance patients'

* Corresponding author at: Decision Psychologist, Tilburg Institute for Behavioral Economics Research (TIBER), Department of Social Psychology, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, The Netherlands. Tel.: +31 13 466 8394; fax: +31 13 466 2067.
E-mail address: MariekedeVries@TilburgUniversity.edu (M. de Vries).
[1] Equal contribution.

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involvement in medical decisions [3,5,6], and increase patients' knowledge and contentment with the decision-making process [4,5]. Yet the effects of DAs on decision quality and process measures (e.g., decisional conflict, feeling clear about one's values) are not consistent [5].

DAs often incorporate values clarification methods (VCMs) to help elicit patients' treatment values and help patients make decisions. Many VCMs encourage patients to follow deliberative, analytical processes in comparing available choice options, suggesting an assumption on the part of developers that deliberation is the preferable strategy for making medical decisions [18]. This assumption has strong historical precedent, but lacks a solid theoretical or empirical grounding, and is in conflict with what we know about natural human reasoning and action, which are not purely analytical and depend strongly on intuition [19–30].

In the present article we argue that the effectiveness of DAs, and of VCMs in particular, may be enhanced by drawing on the strengths and minimizing the weaknesses of both deliberative as well as intuitive decision processes. For the purposes of the present article, deliberative decision processes are defined as effortful, conscious and analytical and include decision strategies such as making lists of pros and cons, as well as explicitly rating and weighting these pros and cons. By contrast, intuitive processes are defined as less effortful and less conscious processes. For example, implicit and apparently effortless integration of available information can give rise to affective responses and gut feelings on which intuitive decisions can be based. Such affectively-based decisions are an important subset of intuitive decisions, but there are other types of intuitive decision processes, such as the reliance on fast-and-frugal heuristics, as we will discuss in more detail later [4,31–33]. Whereas deliberative and intuitive processes are not always entirely distinct, they clearly have been shown to have different effects on decision making [4,33,34].

1.2. Intuition and deliberation in patient decision making

Evidence from psychological literatures suggests that at least in some contexts, deliberation may interfere with decision making, and intuitive decision strategies sometimes result in better outcomes [19,21,34]. As we will outline in more detail below, encouraging patients to extensively deliberate about their personal preferences may have some unintended, potentially harmful implications. Yet encouraging patients to deliberate also serves important goals, such as supporting patients in taking a more active role in the decision-making process with their health care providers.

In order to understand how to design DAs and VCMs so that they result in the intended outcomes, we underscore the need to better understand the nature of intuitive and deliberative decision processes that are involved in patient decision making, and that are likely to be affected by the design of DAs and VCMs [1,5,16,18,35]. In the present article we aim to (a) provide an in-depth treatment of this issue, as well as (b) clarify how existing research findings can serve as a framework for developing hypotheses about how these decision tools may influence outcomes.

2. Strengths and pitfalls of intuition and deliberation in patient decision support

Throughout western intellectual history, the dominant view has been that decisions are best made via analytical reasoning, and that feelings interfere with good, rational decision making [36]. Indeed, ample evidence has shown that reliance on heuristic processing or initial emotional reactions (e.g., fear, panic, anger) can cause bias and error [37–39]. However, an influential body of research also suggests that intuitions may be surprisingly accurate, because they can be based on an implicit integration of a large amount of information [4,19–24,32–34,40]. In fact, when it comes to making important personal decisions, rational reasoning seems to strongly depend on intuitive processes [19–24]. In the following sections, we will review literature that illuminates both these strengths and weaknesses of intuitive and deliberative decision making strategies.

2.1. Deliberative decision making: taxonomy of strengths and pitfalls

2.1.1. Strengths of deliberation

Deliberation serves several important goals in decision making. First, deliberation is likely to help people articulate their preferences. Deliberation may empower patients by enhancing their ability to engage in the shared decision-making process, and communicate what they want to physicians [6]. Moreover, deliberation may help decision-makers articulate reasons for their preferences, which may reduce uncertainty and decisional conflict, and help patients communicate why they have certain preferences [5].

A second advantage of deliberation is that after people analyze reasons for the values they find important, they act more value-congruently. For example, when people are asked to analyze their reasons for why they find the value "helpfulness" important, they later behave in a more helpful manner [41]. In the context of patient decision support, this could cause patients to make decisions that are more consistent with earlier-stated preferences and values. However, as we will discuss in more detail later on, the preferences that people report after deliberative reasoning may systematically underweight attributes that are difficult to articulate, but that may nonetheless be important to the decision at hand.

A third benefit of deliberation is that it may fit patients' expectations about how health decisions should be made. When a person feels good about how a decision is made, this can affect how the person feels about the quality of the decision itself [33,42,43]. For example, when people believe that mental effort is required to get the best decision outcome, they may interpret their exertion of mental effort as a signal that an optimal decision has been achieved [43]. This suggests that if a patient believes that deliberation is the optimal strategy for the decision at hand, then deliberative decisions will be viewed more favorably than intuitive decisions, irrespective of the actual benefit of either strategy.

Finally, DAs are explicitly designed to encourage patients to follow the logic of utilitarian decision-making, based on the assumption that this will help patients to make decisions that maximize utility. Hence, a fourth potential strength of encouraging patients to deliberate in a DA is that this encourages them to explicitly consider the likelihood of different outcomes and the values they attach to these outcomes, and to decide based on a logical integration of these. However, as outlined below, explicitly considering and integrating likelihoods and values associated with different outcomes is a complex and error-prone process that may not only help, but also harm decision making.

2.1.2. Pitfalls of deliberation

A growing body of evidence shows that deliberation also has several important limitations, and may even be harmful to preference construction. First, in the choices patients face, some choice attributes evoke strong immediate emotions, such as feelings of anxiety or depression. When experiencing negative emotions, subsequent thinking will be likely to be emotion-congruent, sustaining and possibly even intensifying these initial negative emotional reactions [44,45]. For example, prolonged elaborative processing when experiencing feelings of depression