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Original article

## Valuing the invaluable: Do emotional experiences during fertility treatments affect the willingness to pay for them?

*Évaluer l'inévaluable : le vécu émotionnel durant un traitement de fertilité influe-t-il sur le consentement à payer pour ledit traitement ?*

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### ABSTRACT

**Introduction.** – This paper extends the accepted economic method of valuation by taking psychological factors into consideration.

**Objective.** – The unique psychological factors of in-vitro fertilization (IVF) have been explored and examined in order to discover whether psychological variables are correlated to background factors: sociodemographic, satisfaction from IVF medical treatment and health related factors, and whether psychological variables have an influence on the willingness to pay (WTP) for IVF treatment. Another purpose of this paper is to investigate the moderating effects of satisfaction from IVF treatment on the relationship between the psychological variables and the willingness to pay (WTP) for IVF treatment.

**Method.** – The study was carried out on 204 patients from 8 public IVF units, and provided data on their emotional response and their maximum WTP for IVF treatment.

**Results.** – Background factors were found to have a significant impact on IVF patients' emotional outcomes. Evidence was found for gender-based variances in psychological reactions related to infertility; however, WTP remained robust and was not influenced by psychological variables. The results show that satisfaction from treatment can be regarded as a moderating variable between the psychological variables and the willingness to pay (WTP) for IVF treatment.

**Conclusion.** – The research findings indicate that fertility problems affect the quality of life of women more adversely than of men, and women suffer more negative emotions as a result of infertility. A unique emotional response that seems to be an important outcome in the experience of infertility and that was demonstrated in our study is shame. The sociocultural environment affects emotional responses regarding WTP, while IVF patients' satisfaction with medical treatment may moderate the emotional effect of psychological factors on the WTP for IVF treatment.

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### R É S U M É

**Introduction.** – Dans cette étude, la méthode d'évaluation économique en vigueur est élargie en prenant en considération des facteurs psychologiques.

**Objectif.** – Les facteurs psychologiques particuliers impliqués dans le processus de fécondation in vitro (FIV) ont été étudiés et examinés afin de découvrir si les variables psychologiques sont corrélées aux facteurs contextuels de base : facteurs sociodémographiques, satisfaction du traitement médical et facteurs médicaux, et si elles influent sur le consentement à payer (CAP) pour un traitement de FIV. Un objectif supplémentaire de cette étude est d'examiner les effets modérateurs de la satisfaction du traitement de FIV sur la relation entre les variables psychologiques et le CAP pour une FIV.

**Mots clés :**

Méthode d'évaluation contingente (CVM)

Fécondation in-vitro (FIV)

Facteurs psychologiques

Consentement à payer (CAP)

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**Méthode.** – L'étude a été réalisée sur 204 patients issus de huit centres de FIV en hôpitaux publics, et fournit des données sur leurs réactions émotionnelles et leur CAP pour une FIV.

**Résultats.** – Les facteurs individuels se sont révélés avoir un impact significatif sur les émotions ressenties par les patients de FIV. Les réactions psychologiques liées à l'infertilité dépendent du sexe du sujet étudié, mais le CAP s'avère robuste et non-dépendant des variables psychologiques. Les résultats montrent que la satisfaction du traitement peut être considérée comme une variable intermédiaire entre les variables psychologiques et le CAP pour une FIV.

**Conclusion.** – Les résultats indiquent que les problèmes de fertilité affectent la qualité de vie des femmes plus fortement que celle des hommes, notamment en termes d'émotions négatives liées à l'infertilité. Notre étude apporte également un résultat important à propos de l'expérience d'infertilité : le sentiment de honte ressenti. L'environnement socioculturel influe sur les réactions émotionnelles liées au consentement à payer. La satisfaction du traitement médical ressentie par les patients de FIV pourrait également modérer l'effet du ressenti émotionnel lié aux facteurs psychologiques qui jouent sur le consentement à payer pour une FIV.

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## 1. Introduction

There has been a surge in research in the field of health psychology in the wake of groundbreaking studies that showed the relations between biological, psychological, behavioral, and social forces. Health psychology research focuses on documenting significant relations between an independent variable (e.g., emotions and psychological factors) and an outcome variable (e.g., health status and/or decisions about health care); it considers the underlying causal mechanisms and processes wherein health is impacted by certain psychosocial factors, and explores differences between individuals in the relations between biological, psychological, behavioral, and social factors.

In the last decades the number of couples seeking assisted-reproduction treatments has increased (Brigham, Cadier, & Chevreul, 2013; Chambers, Sullivan, Ishihara, Chapman, & Adamson, 2009; Chambers, Adamson, & Eijkemans, 2013; Walsh, Collins, LeD.U, Walsh, & Sills, 2009). The experience of infertility is described in the literature as emotionally intense (Boivin & Lancaster, 2010; Macklon, Stouffer, Giudice, & Fauser, 2006; Schmidt et al., 2005; Deka & Sarma, 2010). Various reproductive technologies are available to treat infertility; these include in-vitro fertilization (IVF) which helps couples suffering from fertility problems achieve a pregnancy with the aid of hormonal and other intrusive medical interventions. Most studies recognize that IVF is a complex procedure, which involves physical suffering and emotional disorders. IVF causes a wide range of feelings (i.e., frustration, depression, hopelessness, and anger), while different evaluations of the situation the patient is involved in (different types of fertility diagnosis, duration of infertility, number of past IVF cycles, different phases in the IVF treatment etc.), as well as different personalities and environmental resources, evoke different emotional responses during crisis management situations. Common psychological reactions, which were reported, are: stress, anxiety, tension, and depression (Klonoff-Cohen, Chu, Natarajan, & Sieber, 2001; Lykeridou et al., 2011; Salvatore et al., 2001; Verhaak et al., 2001; Volgsten, Svanberg, Ekselius, Lundkvist, & Poromaa, 2008; Gourounti et al., 2012).

IVF treatments are costly and usually lead to various emotional effects (Macklon et al., 2006; Van Den Broeck, D'Hooghe, Enzlin, & Demyttenaere, 2010), inviting the integration of concepts from the field of social health psychology which deal with the influence of psychological attributes relating to health-care procedures/health condition on the standard economic theory of human behaviour and decision making (Spash et al., 2009).

The dominant economic theory of decision-making, which includes consumer theory, assumes that individuals try to maximize their utility subject to certain constraints. According to

Lancaster (1966, 1971), utility is derived from the characteristics or attributes of the product. Ryan (1995) applied Lancaster's approach to the field of health economics. A useful approach to the study of economic decisions is the contingent valuation methodology (CVM), which allows the assessment of a complex utility function. CVM draws on a technique known as Willingness-to-Pay (WTP), which is based on posing direct hypothetical questions to respondents about "Maximum WTP" – the maximum amount of money they would agree to pay for a specific product or service or an attribute of a product, in a case where there is no conventional market. The CVM using the WTP technique is, then, preferred by economists due to its attributed ability to measure non-priced products and services. The WTP technique is based on the basic assumption that "the maximum amount of money an individual is willing to pay for a commodity is an indicator of the value to him/her of that commodity" (Ryan, 1998; p. 182).

In examining response to an intervention, research questions in medical, psychological research and other disciplines frequently require that indirect effects be assessed as well. A resampling strategy known as bootstrapping has increasingly appeared in the literature as a useful method for assessing moderated indirect effects (Bollen & Stine, 1990; Lockwood & MacKinnon, 1998; MacKinnon et al., 2004; Preacher & Hayes, 2004; Shrout & Bolger, 2002). In the bootstrapping method, each smaller sample is seen as representing the larger sample from which it was taken, and by multiple resampling, of smaller samples randomly drawn from the larger set of data, the desired statistic can be calculated (Preacher, Rucker, & Hayes, 2007). In order to better understand the interaction of the dependent and independent variables, it was proposed that the possibility must be considered of a third, intervening variable that explains the observable relationship between the two variables and has a moderating effect. The techniques and strategies for isolating the intervening variable was set forward in the literature by Edwards and Lambert (2007), Fairchild and MacKinnon (2009), Morgan-Lopez and MacKinnon (2006), Muller, Judd and Yzerbyt (2005), and Preacher, Rucker and Hayes, (2007). Third variable analyses offer the prospect of understanding the inner workings of the "black box" and thus, a more complex understanding of interdependencies between psychological processes and health. One example of this detailed examination of relations between variables is moderation (Kraemer, Kiernan, Essex, & Kupfer, 2008). To define it generally, moderator is any variable that has an effect on the relationship between two or more variables and under what conditions it applies; moderation is the effect the moderator has on this association (Dawson, 2014). A moderator variable is one which shows changes in the relation between the independent variable and dependent variable at various levels

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