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Investigating the 'placebo personality' outside the pain paradigm

Margot Darragh *[,1], Roger J. Booth [1], Nathan S. Consedine [1]

Department of Psychological Medicine, University of Auckland, New Zealand

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ABSTRACT

Aim: To identify personality traits related to placebo responding outside the context of pain.
Methods: Sixty three healthy volunteers completed the study. Personality traits were measured online one week prior to a laboratory session in which two psychosocial stress tests were administered. Prior to the second test, the placebo group received an intranasal spray of 'serotonin' (placebo) with the suggestion that it would enhance recovery. Subjective stress, heart rate and heart rate variability were measured. Self reported and physiological responses to the placebo suggestion were assessed against personality variables.
Results: Placebo effects were demonstrated in both self reported and physiological stress metrics. Lower optimism and less empathic concern predicted greater perceived benefits from the placebo treatment; and lower drive, fun, and sensation seeking were related to a greater physiological response to the manipulation. Multivariate analyses revealed lower optimism and behavioural drive to be predictive of responding to the placebo manipulation.
Conclusion: Findings are in contrast with prior work in pain paradigms which found higher levels of the same traits to be related to greater placebo analgesic responses. A cluster of traits characterised by behavioural drive, extraversion, optimism and novelty or fun seeking appears to be germane to placebo responsiveness, but contextual stimuli may generate different patterns of responding. A new conceptualisation of placebo responsiveness may be useful. Rather than a 'placebo personality' it may be that responsiveness is better typified by a two faceted transactional model, in which different personality facets respond to different contextual contingencies.

Introduction

There is now a vast literature documenting the placebo effect. While considerable progress has been made towards understanding this phenomenon [1], a question that remains unresolved is whether we can identify reliable personality predictors of the placebo response [2]. Recent evidence suggests that responsiveness might be typified by a cluster of positively valenced, reward related and socially oriented traits. Optimism [3–5], empathy [6], extraversion [7], a 'dopamine related trait' [8], ego resilience, altruism, straight forwardness and low hostility [9] have been linked to greater responding. These traits are cohesive and share conceptual and empirical links [10,11].

However, most placebo research has been conducted within pain or related contexts [12] and the link between these traits and responding may not be generalisable. Particular environmental contingencies are available in pain paradigms. Interactions with empathic practitioners, positively valenced goals, and externally oriented cues may be optimally suited to facilitating responding in this social, positive, and reward responsive personality type. For example, extraversion predicted placebo induced improvements in irritable bowel syndrome symptoms *only* in the presence of an empathic practitioner [7]. Empathic concern was *only* related to placebo analgesic responses in a social learning condition that involved a confederate [6], and the link between optimism and responsiveness may only eventuate in positively valenced contexts [13,14].

Thus, it is not entirely clear whether the aforementioned 'type' represents a generic placebo responder or just one type of responsiveness that is exhibited in pain paradigms. There may be other traits associated with placebo responsiveness in other contexts. For example, research in non pain paradigms has found other traits, such as absorption [15], acquiescence [16], and suggestibility [17], to be associated with greater responding. A broadening of context beyond placebo analgesia, with a concomitant broadening of measurement is needed to fully investigate the possibility of other placebo responsive types.

The purpose of this study was to identify personality traits related to placebo responses outside the context of pain. Personality was assessed via an online questionnaire 1–2 weeks prior to an experimental session in which two psychosocial stress tests were administered. Prior to the

* Corresponding author at: University of Auckland, Department of Psychological Medicine, Faculty of Medical and Health Sciences, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel.: +64 9 373 7599x86562.
E-mail address: m.darragh@auckland.ac.nz (M. Darragh).
[1] All authors are affiliated with the University of Auckland.

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second test, placebo 'serotonin' was administered via an intranasal spray with the suggestion that it would enhance recovery. Self reported and physiological indicators of stress were assessed. A control group underwent the same procedures other than the administration of the intranasal spray and the accompanying suggestion.

Methods

Participants

A sample of 63 healthy volunteers was recruited via invitations posted on the University of Auckland intranet and social media sites. No course credit was available for participation. To be eligible, participants had to be English speakers, have no recent psychopathology, chronic medical or heart conditions, and, if female, not be pregnant. Those eligible to take part were sent consent forms and then a link to an online personality questionnaire. After questionnaire completion participants were scheduled for a 75 minute laboratory session. A flow chart of the recruitment enrolment process is shown in Fig. 1.

Blinding and randomization

Participants were block randomized into placebo or control conditions by the researcher (M.D.) after the initial introductory overview, to avoid knowledge of group allocation affecting the Phase I procedures (Fig. 2). The researcher also delivered the placebo manipulation. The research assistant (RA) was blind to group and so could neutrally administer both stress tests.

Experimental procedure

To begin, the researcher described procedures and reiterated the deceptive cover story (investigating the interaction between serotonin, stress recovery, and psychological factors). The researcher then left the lab and the RA carried out all Phase I procedures (Fig. 2) starting with a baseline questionnaire (BQ), and baseline measures (Base1) of heart rate (HR), heart rate variability (HRV), and stress (S1). The RA then administered the first stress test, a 5 minute mental arithmetic test involving sequential subtraction adapted from a previous study [18]. Participants were asked sequentially to subtract 163 from 8500 as quickly as possible. Participants could not progress until they gave the correct answer. Reported stress was measured immediately afterwards (S2), and then a 5 minute recovery period commenced (Recover1). After this period stress was again assessed (S3), marking the end of Phase I and the start of a 5 minute break. In Phase I all participants underwent the same procedures.

Phase II commenced with measures of stress (S4), HR, and HRV (Base2). The researcher then replaced the RA and remained in the lab for the duration of Phase II. Participants were told whether they

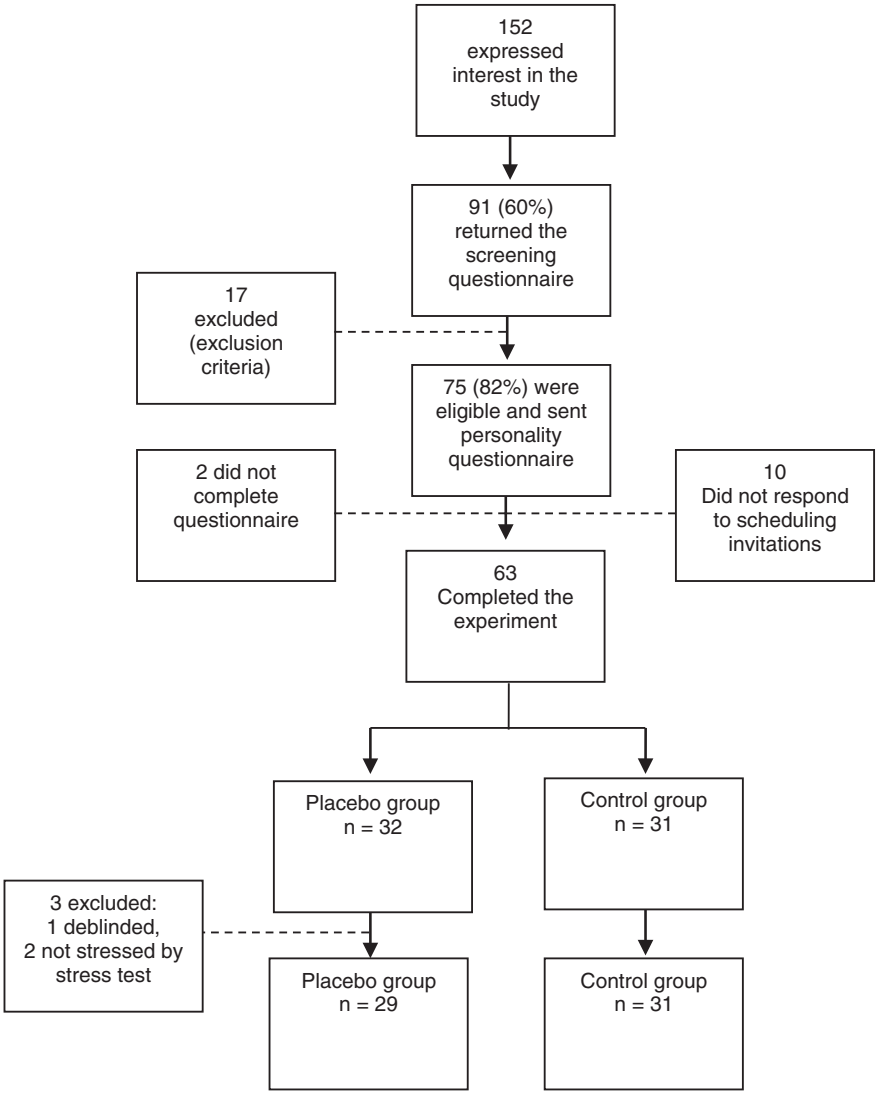

Fig. 1. Flow chart of the study recruitment, enrolment, and participation including any necessary exclusions.