



**Blood and organ donation: Health impact, prevalence, correlates and interventions.**

Journal:	<i>European Health Psychology Society</i>
Manuscript ID	GPSH-2018-0582.R3
Manuscript Type:	Psychology and Health
Keywords:	Blood Donation, Organ Donation, Altruism, Reciprocity

SCHOLARONE™  
Manuscripts

Ferguson E, Murray C & O'Carroll RE (2019) Blood and organ donation: health impact, prevalence, correlates, and interventions. *Psychology and Health* p. 32.  
<https://doi.org/10.1080/08870446.2019.1603385>

## Blood and organ donation: Health impact, prevalence, correlates and interventions.

### Abstract

**Objective:** Without a supply of blood, health services could not meet their clinical needs. Similarly, organs for transplantation save and transform lives. Donations are acts of generosity that are traditionally seen as altruistic, and accordingly, interventions to recruit and retain blood and organ donors have focused on altruism. We review the predictors, prevalence and correlates of these two behaviours, how effective interventions have been, and draw common themes. **Design:** Narrative review. **Results:** We highlight that both recipients and donors benefit, and as such neither blood nor organ donation is purely altruistic. We also highlight health problems associated with both types of donation. In evaluating interventions, we highlight that a move to an opt-out default for organ donation may not be the simple fix it is believed to be and propose effective interventions to enhance the opt-in default (e.g. social media updates). We show that incentives, text messaging, feedback and a focus on prosocial emotions (e.g., 'warm-glow', 'gratitude') may be effective interventions for both blood and organ donation. Interventions designed to reduce fainting (e.g., water pre-loading) are also effective for blood donation. **Conclusions:** We conclude that affect is key to understanding both types of donation and in designing effective interventions.

## Definitions

### What is Blood and Organ Donation?

People's health is influenced, in part, not only by their own behaviour (e.g., diet) but also by the behaviour of others. Some aspects of people's behaviour negatively impacts other's health (e.g., passive smoking), while other aspects have dramatic life changing benefits. Such life changing benefits are exemplified by blood and organ donation. Blood and blood products are derived from (1) *whole* blood donations (i.e., giving 450mls of blood), or (2) *apheresis* donations (e.g., where blood is drawn, platelets and plasma extracted, and the blood replaced in the donor minus these products). Organs similarly come from two avenues of donation: *posthumous* and *living*. Living donations are further divided into *directed* donation towards a family member, and *non-directed* (so called 'altruistic') donation towards a stranger (Table 1). All forms of blood and organ donation are traditionally viewed as altruistic.

However, how strong is the evidence for the claim of altruism?

**Altruism – Behavioural Definition:** For all types of blood and organ donation, people give voluntarily, without personal gain, at some personal cost, to help a stranger in need (Ferguson, 2015; Ferguson & Lawrence, 2015; Ferguson & Masser,

1  
2  
3  
4 2018; Steinberg, 2010). Specifically, whole blood and apheresis donors give blood  
5  
6  
7 voluntarily to benefit a stranger in need, but also pay a cost in terms of time, effort,  
8  
9  
10 blood loss, and undergoing a medical procedure. Posthumous organ donation  
11  
12  
13 occurs after death. Under an opt-in system (see later) there may be some emotional  
14  
15  
16 cost to registering on the organ donor register (ODR), as it forces the individual to  
17  
18  
19 confront their own mortality and bodily integrity (Morgan, Miller & Arasaratnam, 2002;  
20  
21  
22 Morgan, Stephenson, Harrison, Afifi & Long, 2008). Living organ donors can donate  
23  
24  
25 a kidney or a lobe of either their liver or lung. This incurs significant cost in terms of  
26  
27  
28 medical procedures, loss of an organ or part of an organ, and pain and recovery  
29  
30  
31 from surgery. For directed organ donation, there may be additional costs in terms of  
32  
33  
34 social interactions with relatives where the donor may feel coerced or obliged to  
35  
36  
37 donate (Gill & Lowes, 2008; Sharp & Randhawa, 2014)<sup>1</sup>. *Evolutionary biology*  
38  
39  
40 defines altruism as a behaviour that increases the fitness of the recipient (i.e., long-  
41  
42  
43 term survival and fecundity) at a cost to the donor's fitness (Bshary & Bergmüller,  
44  
45  
46 2008; Sober & Wilson, 1998). Behaviourally, all types of blood and organ donation fit  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57

---

58  
59 <sup>1</sup> There may also be an additional cost as in some cases the donor finds out that they are not  
60 actually related to their relative.

1  
2  
3  
4 this definition. However, while behaviourally an act may appear altruistic, it may not  
5  
6  
7 be motivated exclusively by the needs of others (Sober & Wilson, 1998).  
8  
9

10  
11 **Altruism – Motivational Definition and Considerations: *Psychological altruism***  
12

13  
14  
15 focuses on the motivations underlying helping behaviour (Sober & Wilson, 1998).  
16

17  
18 Motivational definitions of altruism across economics, psychology and philosophy  
19

20  
21  
22 converge on the idea that *pure altruism* is either a preference, or an ultimate desire,  
23

24  
25 to maximize the welfare (utility) of others, by reducing their suffering, at a personal  
26

27  
28 cost, without personal benefit (Andreoni, 1990; Batson, 1991; Nagal, 1970). So, are  
29

30  
31  
32 blood and organ donors motivated by *pure altruism* or is there some *personal*  
33

34  
35  
36 *benefit?*  
37  
38

39  
40 Ferguson (2015a) suggested a framework to understand and model these  
41

42  
43 motivations that maps the mechanisms of altruism (MOA) derived from psychology,  
44

45  
46 economics, biology, sociology, and philosophy (e.g., Andreoni, 1990; Batson, 1991;  
47

48  
49 Fehr & Fischbacher, 2004a, 2004b; Fehr & Schmidt, 1999; Nowak, 2006) onto blood  
50

51  
52 and organ donor motivations, preferences and behaviour. Drawing on the MOA  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 approach, behavioural economic analyses<sup>2</sup> of blood and organ donor preferences

5  
6  
7 has revealed that both are not purely altruist (Ferguson, 2012a; Ferguson, 2015;

8  
9  
10 Ferguson & Lawrence, 2018; Ferguson, Zhao, O'Carroll & Smillie, 2018). Rather

11  
12  
13  
14 blood donors are motivated by a general prosocial preference towards 'warm-glow'

15  
16  
17 (Ferguson, Farrell & Lawrence, 2008; Ferguson, Taylor, Keatley, Flynn & Lawrence,

18  
19  
20  
21 2012a). Warm-glow describes the feelings of positive affect that arise as a

22  
23  
24  
25 consequence of helping (Andreoni, 1990, 1995). Furthermore, Ferguson, Atsma, de

26  
27  
28  
29 Kort, and Veldhuizen (2012) identified a preference in blood donors they termed

30  
31  
32 '*reluctant altruism*'. Reluctant altruists help because they do not trust others to help.

33  
34  
35  
36 This is particularly the case in a context like blood donation where 96% free-ride on

37  
38  
39 the generosity of the 4% of the eligible population who donate blood at any one time.

40  
41  
42  
43 The idea of reluctant altruism further suggests that blood donors are more likely to

44  
45  
46  
47 act when they perceive others as acting unfairly. Consistent with this, blood donors

48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  

---

<sup>2</sup> The MOA approach recommends that behavioural economic games are used to assess these mechanism so as to avoid social desirability effects when simply asking people why they donate blood or register to be an organ donor (Ferguson 2015a; Ferguson & Lawrence, 2015).

1  
2  
3  
4 have been shown to have an increased tendency to punish unfairness (Ferguson &  
5  
6  
7  
8 Lawrence, 2018).

9  
10  
11 While for some there may be emotional costs to signing the organ donor register  
12  
13  
14 (Morgan et al., 2002, 2008), as the donor is deceased, the actual personal physical  
15  
16  
17 cost for posthumous organ donation is zero. This has led some to question its pure  
18  
19  
20 altruistic nature (Moorlock, Ives & Draper, 2014). Ferguson et al. (2018) reasoned  
21  
22  
23 that if this were the case, organ donors should have a preference for costless  
24  
25  
26 helping in general. Consistent with this reasoning, in a series of economic games to  
27  
28  
29 assess costless and costly helping, organ donors gave more generously in a  
30  
31  
32 costless game. Thus, some people may be drawn to posthumous organ donation  
33  
34  
35 due to its relative costless nature.  
36  
37  
38  
39  
40  
41

42 Directed living donors may feel coerced or obliged to donate to loved ones, which  
43  
44  
45 undermines the voluntary nature of the behaviour (Gill & Lowes, 2008; Lennerling et  
46  
47  
48 al., 2003). The non-directed donor also may gain personal benefits in terms of pride,  
49  
50  
51 admiration by others or self-esteem (Roff, 2007). In both cases, therefore, the notion  
52  
53  
54 of pure altruism is undermined.  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 Thus, we can see that all forms of blood and organ donation may be better  
5  
6  
7 described as acts of impure altruism.  
8  
9

## 10 11 **Impact of Blood and Organ Donation** 12

13  
14 For blood and organ donation there are impacts both on the donor (or their  
15  
16 family) as well as the recipient, as discussed below.  
17  
18  
19  
20

### 21 **Blood Donation** 22

23  
24  
25  
26 **Impact on the Recipient:** Health services could not operate without a continual  
27  
28 supply of blood. This is used to treat a wide range of illnesses and disease  
29  
30 processes. For example, from whole blood, red blood cells, among other things, are  
31  
32 used to treat anaemia, sickle cell disease, thalassaemia, blood loss following surgery  
33  
34 and trauma in child-birth, as well as in palliative care. White cells are used to treat  
35  
36 immunodeficiency conditions. platelets to treat clotting deficient conditions (e.g.,  
37  
38 leukaemia) and immunoglobins and albumin, derived from plasma, to treat  
39  
40 infections, as well as kidney and liver disease.  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51

52  
53  
54 **Impact on the Donor:** Both positive and negative health effects have been  
55  
56 reported for donors. There is increasing evidence that whole blood donation may  
57  
58  
59  
60



1  
2  
3  
4 result in long-term iron deficiency (Brittenham, 2011; Di Angelantonio et al., 2017).  
5  
6

7 Whether or not this is of clinical significance and its effects on long-term health are  
8  
9  
10 yet fully determined. There are also reported health benefits of donating blood with  
11  
12  
13 respect to: (1) reduced mortality (Ullum et al., 2015; Vahidnia et al., 2013), (2) better  
14  
15  
16 mental health in young donors and physical health in older donors (Rigas et al.,  
17  
18  
19 2017), and (3) reduced risk of myocardial infarction (Salonen, Tuomainen, Salonen,  
20  
21  
22 Lakka & Nyysönen, 1998). However, there is a potential *selection bias* (the '*healthy*  
23  
24  
25 *donor effect*') in operation as blood donors are a self-selected healthier group  
26  
27  
28  
29  
30  
31  
32 (Atsma, Veldhuizen, Verbeek, de Kort & de Vegt, 2011). Yet even after controlling for  
33  
34  
35 the 'healthy donor effect,' there is still evidence of reduced mortality (Ullum et al.,  
36  
37  
38 2015) and better self-reported health (Atsma et al., 2011) in blood donors, which  
39  
40  
41  
42 may reflect healthier lifestyles amongst blood donors (Atsma et al., 2011).  
43  
44  
45

## 46 Organ Donation

47  
48  
49  
50 **Impact on the Recipient:** Advances in transplant surgery and post-surgical  
51  
52  
53 medical care mean that post-transplant outcomes for patients are usually very good  
54  
55  
56  
57 (National Health Service Blood and Transplant [NHSBT], 2017). However, there  
58  
59  
60

1  
2  
3  
4 currently exists a global shortage of organs for transplant, significantly impairing the  
5  
6  
7 health and well-being of those awaiting donated organs. In 2018 in the US more than  
8  
9  
10 114,000 people were awaiting an organ transplant, around 20 of whom died every  
11  
12  
13 day (organdonor.gov), and in the UK, more than 6,000 people were on the transplant  
14  
15  
16 waiting list, approximately three of whom died every day (NHSBT;  
17  
18  
19  
20  
21 <https://www.nhsbt.nhs.uk>).

22  
23  
24  
25 **Impact on the Donor:** For the posthumous donor there is no direct impact, but  
26  
27  
28 there is impact for the relatives of the donor, who will be approached (both under  
29  
30  
31 opt-in and soft opt-out defaults) by a specialist nurse for organ donation (SNOD) to  
32  
33  
34 consent to their relatives' organs being used for transplant. This can be a very  
35  
36  
37 distressing time for family members who are coming to terms with the death of a  
38  
39  
40 relative and are then asked for consent for their relatives' organs to be removed and  
41  
42  
43  
44  
45  
46 donated.

47  
48  
49  
50 For living donation there are significant health impacts on the donor that arise from  
51  
52 the removal of the organ, not just in terms of the surgery and immediate recovery, but also in  
53  
54 terms of long-term health consequences. For example, persistent post-surgical pain is  
55  
56 reported by over one quarter of living liver donors 12-months later (Holtzman et al., 2014).  
57  
58  
59  
60

## Prevalence of Blood and Organ Donation

### Blood Donation

**How many donate blood?** Across Europe about 40% of people say that they have donated whole blood at some point in their lives

([http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs\\_333b\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_333b_en.pdf)).

However, while blood and blood products are available to all, at any one time only 3-4% of the eligible UK population donate blood. This figure is consistent across western style donation systems. At present, in the UK, whole blood donors can donate up to 4 times a year if male, and 3 times if female, while apheresis donors can donate up to 24 times a year.

**How many donors are needed?** Whole blood has a shelf life of 35 days and the UK National Health Service (NHS) requires 31 units of blood per 1000 of the population, per annum, to provide the efficient and safe delivery of health care (Blood 2020, NHSBT Annual Review 2012-13). To meet these healthcare demands, recruiting new donors, especially young donors, is an ongoing issue, with nearly 200,000 new donors required by the UK NHS yearly. New donors, compared to repeat donors, have a higher risk of fainting and higher incidence of red cell antibodies for transfusion-transmittable-infections (TTIs) (Lucky et al., 2013; Zou et al., 2012). Thus, converting 'new donors' into 'repeat donors' constitutes a significant saving in terms of recruitment costs, improved donor safety, and reduce waste in terms blood that cannot be subsequently used. However, the conversion rate from 1<sup>st</sup> to repeat donations is low, with only 7.2% making three subsequent donations (Schreiber et al., 2005), thus interventions to enhance conversion rates are needed.

While there has been a steady reduction in the demand for red cells across the world, due to better cell-salvage or operative procedures, this does not mean that recruiting new

1  
2  
3  
4 donors and retaining repeat donors is not an on-going issue. Future shortfalls in blood  
5  
6 supplies are predicted as the population ages (requiring more transfusions), the current donor  
7  
8 pool ages out, and younger donors not being recruited to replace lost donors (Carter et al.,  
9  
10 2011; Greinacher & Fendrich, 2010; Greinacher, Fendrich, Alpen, & Hoffman, 2007;  
11  
12 Greinacher, Fendrich, & Hoffman, 2010).

13  
14  
15 **Who is needed?** With the genomic revolution, more detailed blood typing and  
16  
17 matching offers the possibility of improved treatment options that require matching specific  
18  
19 donors with particular blood types and antigens to specific recipients. Thus, recruitment  
20  
21 becomes targeted on specifically needed donors, rather than an ‘all-comers model’. This is  
22  
23 exemplified by a world-wide need to recruit donors from minority groups (van Dongen,  
24  
25 Mews, de Kort, & Wagenmans, 2016). A particular need is to encourage donors from Black,  
26  
27 Asian and Minority Ethnic (BAME) backgrounds to improve the treatment of certain  
28  
29 conditions (e.g., sickle cell disease: SCD), that have a higher prevalence in BAME  
30  
31 communities (Shaz, Zimring, Demmons, & Hillyer, 2008). SCD requires repeat transfusions  
32  
33 and are most effectively delivered with phenotype-matched red blood cells for the Ro Kell  
34  
35 antigen to reduce haemolytic transfusion reactions (Shaz et al., 2008). The Ro Kell type has a  
36  
37 much higher prevalence in BAME communities at approximately 55% in black Africans,  
38  
39 43% in black Caribbean, 17-24% in mixed race and 2% in white Caucasians, making  
40  
41 phenotypic matching easier if the number of BAME donors increases. However, of the 4% of  
42  
43 the UK population who donate, only 4% are from BAME groups (NHSBT Annual Review  
44  
45 2012-13). The UK NHSBT needs to recruit 40,000 BAME donors per year, with the current  
46  
47 number approximately 15,000 ([https://nhsbtdeb.blob.core.windows.net/umbraco-assets-](https://nhsbtdeb.blob.core.windows.net/umbraco-assets-corp/4481/nhsbt-strategic-plan-2017-2022.pdf)  
48  
49 [corp/4481/nhsbt-strategic-plan-2017-2022.pdf](https://nhsbtdeb.blob.core.windows.net/umbraco-assets-corp/4481/nhsbt-strategic-plan-2017-2022.pdf)). Thus, interventions to encourage BAME  
50  
51 donors is a pressing clinical need.  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Organ Donation

1  
2  
3  
4 **How many donate?** Currently, approximately 38% of the population are registered  
5  
6 posthumous donors on the UK opt-in ODR. Furthermore, families/next of kin refuse to  
7  
8 consent in 34% of requests for organs, often over-riding the wishes of potential donors  
9  
10 ([http://www.organdonation.nhs.uk/](http://www.organdonation.nhs.uk/statistics) statistics, NHSBT 2017-2018). This, and other factors  
11  
12 (e.g., health of the donor's organs) means that only a very small proportion of deaths convert  
13  
14 to organs donated. For example, in the UK in 2017-2018 from 600,000 deaths there were  
15  
16 7,281 potential donors which then reduced to 6,038 eligible donors. Of these, only 2,233 had  
17  
18 actively opted-in and this eventually resulted in 1,574 actual donors (NHSBT, 2017-2018).  
19  
20  
21

22 **Who are needed?** Ethnic minority groups represent 11% of the UK population, but  
23  
24 only 7% of deceased organ donors (NHSBT, 2017-2018), and rates of consent from family  
25  
26 members are lower than for white family members. As with blood donation there is an urgent  
27  
28 need to engage BAME communities and explore reasons for the lower consent rates.  
29  
30  
31

## 32 **Correlates of Blood and Organ Donation**

### 33 **Blood Donation**

34  
35  
36 **Theory of Planned Behaviour (TPB):** TPB is the theoretical model most often  
37  
38 applied to blood donor behaviour (Bednall, Bove, Cheetham & Murray, 2013;  
39  
40 Ferguson, 1996). Within the TPB, intentions are the proximal predictor of behaviour,  
41  
42 with intentions predicted by (1) attitudes, (2) subjective norms (i.e., people who are  
43  
44 important to the donor approve of blood donation), and (3) perceived behavioural  
45  
46 control (PBC: i.e., feeling able to donate despite possible barriers). Attitudes can be  
47  
48 further split in to affective (i.e., anticipated and current positive or negative emotional  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 responses) and cognitive (i.e., pros and cons) (Trafimow & Sheeran, 1998). With  
5  
6  
7 respect to blood donation, the TPB has been extended to include *descriptive norms*  
8  
9  
10 (i.e. the perception of how many others perform the behaviour), self-efficacy, and  
11  
12  
13 donor role identity. Prosocial factors including *pure altruism*, *personal moral norms*  
14  
15  
16 (i.e. donors' beliefs that they *ought to help*), and *warm-glow* (termed 'satisfaction with  
17  
18  
19 self' by Bednall et al., 2013) have also been added. Bednall et al.'s (2013) meta-  
20  
21  
22 analytic review showed that intentions are the strongest predictor of blood donor  
23  
24  
25 behaviour ( $r = .362$ ), followed by PBC ( $r = .311$ ), attitudes ( $r = .216$ ) and subjective  
26  
27  
28 norms ( $r = .165$ ). Self-efficacy ( $r = .352$ ) and role identity ( $r = .232$ ) were also  
29  
30  
31 significant predictors of behaviour from the extended TPB. In terms of prosocial  
32  
33  
34 factors, personal moral norms ( $r = .188$ ) and warm-glow ( $r = .097$ ) both predicted  
35  
36  
37 actual donations, but pure altruism did not ( $r = -0.015$ ) (Bednall et al., 2013; see also  
38  
39  
40  
41  
42  
43  
44  
45  
46 Ferguson, 1996).

47  
48  
49 **Transtheoretical Model (TTM):** Blood donors potentially progress through a  
50  
51  
52 'donor career,' cycling through repeat donations (Ferguson, 1996; James &  
53  
54  
55  
56 Matthews, 1993). Starting as non-donors, they then become 1<sup>st</sup> time/novice donors,  
57  
58  
59  
60

1  
2  
3  
4 and if not deferred<sup>3</sup>, return to become repeat donors. This career structure makes  
5  
6  
7 the TTM a promising theoretical framework to describe the donor career and the  
8  
9  
10 types of intervention that may be appropriate at each stage (Ferguson & Chandler,  
11  
12  
13 2005). The TTM consists of two main factors: *stages* and *processes* of change  
14  
15  
16 (Prochaska, DiClemente & Norcross, 1992). The model outlines five *stages* to  
17  
18 progress through: (1) 'pre-contemplation' where individuals have no intention to  
19  
20  
21 change, (2) 'contemplation' where individuals are aware of the reasons to change  
22  
23  
24 and may weigh up the pros and cons, (3) 'preparation' where individuals are  
25  
26  
27 intending to take action in the next month, (4) 'action' where individuals have  
28  
29  
30 successfully achieved the desired behaviour, and (5) 'maintenance' where the  
31  
32  
33 desired behaviour is maintained for at least six months. Ten basic *processes of*  
34  
35  
36 *change* (e.g., consciousness raising) are proposed to facilitate the transition from  
37  
38  
39 one stage to the next (Prochaska & DiClemente, 1982), and can be explained by two  
40  
41  
42 higher order factors with respect to blood donation (Ferguson & Chandler, 2005): (1)  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53 *experiential processes* (e.g., cognitive and emotional strategies including *dramatic*  
54  
55  
56

---

57  
58 <sup>3</sup> A person may be *permanently* (can never give blood) or *temporally* (can give blood after a designed time  
59 window) deferred from blood donation. Permanent deferrals occur if, for example, the person has had a blood  
60 transfusion (or blood products) since 1st January 1980. Temporary deferrals can be on grounds of anaemia,  
travel abroad, sexual behaviour, tattoos, or intravenous drug taking.

1  
2  
3  
4 *relief* i.e. “Dramatic portrayals about the consequences of a lack of blood donors upset me”,  
5  
6 *social liberation* i.e. “I know I'd feel better about myself if I was a blood donor”), and (2)  
7  
8  
9 *behavioural processes* (e.g., activity based strategies including *stimulus control* i.e. “I  
10  
11  
12 leave stickers / letters about blood donation in prominent places around my home” and  
13  
14  
15 *counter-conditioning* i.e. “When giving blood I try to think of something else”). Ferguson  
16  
17  
18 and Chandler (2005) further showed that the number of previous donations was  
19  
20  
21  
22 positively predicted by *behavioural* processes and negatively predicted by  
23  
24  
25  
26 *experiential* processes. Stage and process factors became uncorrelated as donors  
27  
28  
29 became more experienced, suggesting that helping donors develop behavioural  
30  
31  
32 strategies would be beneficial. Further support for the psychometric validity of the  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
TTM with respect to blood donation has been reported (Amoyal et al., 2013; Burditt,  
et al., 2009).

**Prosocial Emotions:** Ferguson and Masser (2018) suggested that prosocial  
emotions are central to understanding blood donor behaviour, and used Haidt's  
(2003) concept of ‘families of moral emotions’ to categorize these. They argued that  
*warm-glow* (i.e. happiness) and *pride* (within the family of self-conscious emotions),  
are key emotions, with warm-glow predicting donor return (Bednall et al., 2013;



1  
2  
3  
4 Ferguson et al., 2008; Piliavin & Callero, 1991), and more likely to be reported by  
5  
6  
7 experienced donors (Ferguson et al., 2012b). Ferguson and Flynn (2016) have  
8  
9  
10 shown, theoretically, that warm-glow can also be anticipated, making it equivalent to  
11  
12  
13 the concept of an anticipated affective reaction in the prosocial context. This is  
14  
15  
16 important as anticipated positive affective reactions have been shown to be  
17  
18  
19 significant predictors of blood donor behaviour (Conner, Godin, Sheeran & Germain,  
20  
21  
22 2013).  
23  
24  
25  
26  
27

28 *Pride* can be divided into *hubristic* (linked to arrogance and conceit), and  
29  
30  
31 *authentic* (linked to achievement) (Tracy & Robins, 2007). Authentic pride is linked to  
32  
33  
34 both prosociality (Tracy & Robins, 2007; Weiner, 1985) and warm-glow (Saito, 2015)  
35  
36  
37 generally, and recent evidence shows that plasma donors report authentic pride as a  
38  
39  
40 function of giving 'more' than whole blood donors (Bove, Bednall, Masser & Buzza,  
41  
42  
43 2011).  
44  
45  
46  
47  
48

49 *Shame* and *guilt* are also self-conscious emotions referring to the self-  
50  
51  
52 representation of personal wrong-doing. Guilt is private and behaviour-focused and  
53  
54  
55 shame public and self-focused (Amodio, Devine & Harmon-Jones, 2007). People are  
56  
57  
58 motivated to avoid the guilt of not acting prosocially or the shame of acting selfishly  
59  
60

1  
2  
3  
4 (Saito, 2015), and both emotions lead to increased prosociality (Allpress, Brown,  
5  
6  
7 Giner-Sorolla, Deonna, & Teroni, 2014). Guilt has been identified as a key blood  
8  
9  
10 donor motivation (France, Kawalsky, France, Himawan, Kessler, & Shaz, 2014), and  
11  
12  
13 one that is linked to donating blood in emergency contexts (Chliaoutakis, Trakas,  
14  
15  
16 Socrataki, Lemonidou, & Papaioannou, 1994). The concept of *anticipated regret* at  
17  
18  
19 not donating is clearly linked to guilt and shame, with evidence showing that  
20  
21  
22  
23  
24  
25 anticipated regret is a strong, positive predictor of both intentions to donate (Godin, et  
26  
27  
28 al., 2005) and actual donation (Godin, Conner, Sheeran, Bélanger-Gravel, &  
29  
30  
31  
32 Germain, 2007).

33  
34  
35 The 'other-praising emotions' of *gratitude*, *awe* and *elevation* are all potential  
36  
37  
38 important predictors of blood donation. Of these, gratitude is likely to be significant.  
39  
40  
41  
42 There is extensive evidence that gratitude is linked to prosociality and both direct and  
43  
44  
45 indirect reciprocity (Ma, Tunney & Ferguson, 2017). Indeed, reciprocity towards the  
46  
47  
48 blood service and the donor, is a frequently cited motivation by blood donors (Bendall  
49  
50  
51  
52 & Bove, 2011).

53  
54  
55  
56 **Fear and Anxiety:** The emotions of fear and anxiety associated with donating  
57  
58  
59 blood have been shown to impact negatively on return rates by increasing the  
60

1  
2  
3  
4 chances of the donor fainting (Chell, Waller & Messer, 2016; Meade, France, &  
5  
6  
7 Peterson, 1996; Viar, Etzel, Ciesielski & Olatunji, 2010), or directly by fear and anxiety  
8  
9  
10 making people less willing to donate in the first place (Bednall & Bove, 2011).

11  
12  
13  
14 **Vasovagal Reactions:** A consistent strong predictor of a donor not returning is  
15  
16  
17 the experience of feeling faint, or actually fainting (Ditto & France, 2006; France et  
18  
19 al., 2014a; France et al., 2013; France, Rader & Carlson, 2005), which results in a  
20  
21  
22 20% and 33% reduction in return rates amongst first time and experienced donors  
23  
24  
25 respectively (France et al., 2005 see also Bednall et al., 2013). Effects of fainting on  
26  
27  
28 return rates are not just confined to those fainting, but are also seen in those  
29  
30  
31 observing others faint (Ferguson & Bibby, 2002).  
32  
33  
34  
35  
36  
37

38  
39 **The Functional Model of Volunteer Behaviour:** Omoto and Snyder (1995) and  
40  
41  
42 Clary et al. (1998) identified six functional motivations for volunteerism (Table 2).  
43  
44  
45 Applied to blood donation more experienced donors express motivations that reflect  
46  
47  
48 avoidance of guilt at not donating, and strengthening of social bonds (Alfieri, Paolo,  
49  
50  
51 Marta, & Saturni, 2016; Paolo, 2013; Paolo, Alfieri, Marta, & Saturni, 2015),  
52  
53  
54

55  
56 **Self Determination Theory (SDT):** Self-determination theory describes people  
57  
58  
59 as motivated along a continuum from extrinsic to intrinsic motivation (Ryan & Deci,  
60

1  
2  
3  
4 2000). Extrinsic motivation has four components that increase in personal autonomy  
5  
6  
7 from 'external regulation' (motivated by rewards), to 'introjected regulation'  
8  
9  
10 (avoidance of guilt), to 'identified regulation' (personally valued behaviour) to  
11  
12  
13  
14 'integrated regulation' (behaviours consistent with a person's life goals). Pure intrinsic  
15  
16  
17 motivations concern behaviours that are enjoyable and satisfying. France, Kawalsky  
18  
19  
20 and colleagues (2014) developed the Donor Identity Survey that assesses the  
21  
22  
23  
24  
25 fundamental motivation of SDT for blood donation. Table 2 shows how the  
26  
27  
28 motivations from SDT, the Functional Model of Volunteer Behaviour and MOA align  
29  
30  
31 with respect to prosociality. For example, intrinsic motivation from SDT and the  
32  
33  
34  
35 enhancement motivation from the functional approach all assess warm-glow, as do  
36  
37  
38 affective attitudes. To avoid a 'jangle fallacy' (where by the same construct is given  
39  
40  
41  
42 different names) in the area of prosociality, we propose that they should all be termed  
43  
44  
45  
46 warm-glow as this is a fundamental MOA.  
47  
48

49 **Personality:** Bekkers (2006) showed that while trait helpfulness (i.e., being  
50  
51  
52 helpful and cooperative) predicted blood donation, traits of warmth (akin to  
53  
54  
55 agreeableness) and empathy did not. The lack of significant association between  
56  
57  
58  
59 both traits of agreeableness and empathy with blood donation has also been  
60

1  
2  
3  
4 reported by others (Ferguson, 2008; Ferguson et al., 2008; Steele, et al., 2008). This  
5  
6  
7 lack of association with prosocial traits, in conjunction with the observation that  
8  
9  
10  
11 repeat blood donation follows a career path, led Ferguson (2008) to reason that trait  
12  
13  
14 conscientiousness (linked to being organized) should predicted repeat donation.  
15  
16  
17  
18 However, while Ferguson (2008) shows that conscientiousness predicts the  
19  
20  
21 frequency and rate of past donations, the link between conscientiousness and  
22  
23  
24 reported future blood donation has not be established (see White, Poulsen & Hyde,  
25  
26  
27  
28 2017).

31  
32 **Deferrals:** A person may be *permanently* (can never give blood) or *temporally*  
33  
34  
35 (can give blood after a designed time window) deferred from blood donation.  
36  
37  
38  
39 Temporary deferrals have a medium sized negative effect on return rates (Bednall et  
40  
41  
42 al., 2013).

45  
46 **Donation Context:** The experience the donor has while donating blood may  
47  
48  
49 greatly influence subsequent donor behaviour. Ferguson (1996) showed that longer  
50  
51  
52 waiting times have a large negative effect on return rates ( $r = .417$ ), while satisfaction  
53  
54  
55  
56 with the quality of services has a positive effect on both return rates ( $r = .092$ ) and  
57  
58  
59 intentions to return ( $r = .290$ ) (Bednall et al., 2013).  
60

1  
2  
3  
4           **Donor Experience (past behaviour):** The number of previous donations has an  
5  
6  
7 important influence on donor return rates, intentions and motivations. More  
8  
9  
10 experienced donors, especially those who have made five or more donations, exhibit  
11  
12  
13 higher return rates (Bednall et al., 2013; Ferguson, 1996; Ferguson & Chandler,  
14  
15  
16  
17  
18 2006). However, the link between past and future blood donor behaviour is complex  
19  
20  
21 and best represented by a quadratic inverted U shaped function, which is positive up  
22  
23  
24 to 60 previous donations, and then levels off and becomes negative (Ferguson &  
25  
26  
27  
28 Bibby, 2002). Similarly, past behaviour influences the effects of intentions on future  
29  
30  
31 behaviour, such that the intentions-behaviour link is significant and positive for novice  
32  
33  
34 donors (4 or less donations), and not significant for experienced donors (5+  
35  
36  
37  
38  
39 donations: Ferguson & Bibby, 2002; Sheeran et al., 2017). Indeed, an inverted U  
40  
41  
42 shaped quadratic function also explains this link between donor intentions and  
43  
44  
45 behaviour, with intention predictive up to a certain point of experience, and then  
46  
47  
48 dropping off (Sheeran et al., 2017). Experienced donors are also less likely to be  
49  
50  
51  
52 adversely affected by temporary deferrals and more positively motivated by  
53  
54  
55  
56 anticipated regret (Bednall et al., 2013).  
57  
58  
59  
60

## Organ Donation

**Models of Organ Donation:** A variety of models have been proposed to explain organ donor behaviour. Many focus on social cognition models (e.g. TPB) and have been recently reviewed by Falomir-Pichastor, Berent and Pereira (2013). The authors conclude that in addition to attitude and intention, 14 additional determinants of organ donation can be identified. Distal predictors of attitude and intention included demographic factors, cultural differences, religiosity, social insertion and personality factors. Proximal predictors of organ donation included behavioural beliefs, normative beliefs, self-efficacy, past behaviour, direct experience, affective reactions, social representations, identity and moral norms. Hyde, Knowles and White (2013) tested the utility of an extended TPB model and found that it explained 75% of the variance in organ donation intentions. Significant predictors in the final model included attitude, subjective norm, self-efficacy, self-identity and in-group altruism. They concluded that future donation strategies should foster a perception of self as the type of person who donates and address preferences to donate organs to in-group members only.

1  
2  
3  
4 The IIFF model (Siegel et al., 2010) propose that four factors are key to  
5  
6  
7 donation: (1) an *immediate* and complete registration opportunity ('ICRO' "a card in  
8  
9  
10 the hand"), (2) *information*, (3) *focused* engagement and (4) *favourable* activation.  
11  
12  
13  
14 Alvaro, Siegel and Jones (2011) tested one component of the IIFF, the ICRO, and  
15  
16  
17 found that simply providing an ICRO significantly increased organ donor registrations  
18  
19  
20  
21 (see section below on community-based interventions).  
22  
23  
24

25  
26 Quick, Anker, Feeley and Morgan (2015) compared three models of organ  
27  
28 donation behaviour – (1) Bystander Intervention Model (BIM) which emphasises  
29  
30  
31 bystanders' situational interpretation with respect to intervening to help others in  
32  
33  
34 need, (2) Vested Interest Theory (VIT) which positions vested interest as a  
35  
36  
37 moderator of the attitude-behaviour relationship, and (3) The Organ Donation Model  
38  
39  
40 (ODM) which was developed to take into account affective attitudes. They found that  
41  
42  
43 VIT accounted for most variance in organ donation registration intentions.  
44  
45  
46  
47  
48  
49

50 **Attitudes of Potential Donors:** Negative affective attitudes have been identified  
51  
52  
53 as important barriers to organ donation (Morgan et al., 2008; O'Carroll, Dryden,  
54  
55  
56  
57 Hamilton-Barclay, & Ferguson, 2011, O'Carroll, Foster, McGeechan, Sandford, &  
58  
59  
60



1  
2  
3  
4 Ferguson, 2011) and shown to be stronger predictors than TPB variables (Morgan et  
5  
6  
7 al., 2008; O'Carroll, Dryden, et al., 2011; O'Carroll, Foster, et al., 2011) or knowledge  
8  
9  
10 (Morgan et al., 2008). These affective barriers include concerns that clinicians may  
11  
12  
13 not try as hard to save the potential donor ("medical mistrust"), disgust at the thought  
14  
15  
16 of donation ("ick factor"), that registering in some way hastens one's death ("jinx  
17  
18  
19 factor"), and discomfort at the thought of one's body being operated on for organ  
20  
21  
22 retrieval ("body integrity").  
23  
24  
25  
26  
27  
28

29 **Personality:** Relationships between the 'Big Five personality traits' (Costa, &  
30  
31 McCrae, 1992; Goldberg, 1993) and organ donation behaviour have been explored,  
32  
33  
34 and the prosocial trait of agreeableness and its facets (e.g., cooperation, trust,  
35  
36  
37 empathy) have been linked to organ donor behaviour and intentions. For example,  
38  
39  
40 individuals registered to donate some specific, but not all organs, have been found to  
41  
42  
43 have higher warmth (agreeableness) (Bekkers, 2006), and higher agreeableness  
44  
45  
46 scores have been associated with positive organ donation attitudes and intentions  
47  
48  
49 (Hill, 2016). Altruism (a facet of agreeableness) has been associated with  
50  
51  
52  
53  
54  
55  
56 possession of a signed organ donor card (Kopfman & Smith, 1996), but was not  
57  
58  
59  
60

1  
2  
3  
4 directly associated with Singapore residents' willingness to donate (Lwin, Williams &  
5  
6  
7 Lan, 2002)<sup>4</sup>, or the organ donor registration status of American students (Hill, 2016).

8  
9  
10  
11 In a meta-analysis, altruism (measured using generic scales that assess low cost  
12  
13  
14 unconditional altruism towards strangers) was associated with an increased  
15  
16  
17 likelihood of organ donor registration (Nijkamp, Hollestelle, Zeegers, van den Borne,  
18  
19  
20 & Reubsaet, 2008). Compassion and empathy (facets of agreeableness) have also  
21  
22  
23 been linked to intentions to donate (Demir & Kumkale, 2013). Thus, unlike blood  
24  
25  
26 donation there seems to be some linkage between unconditional altruism,  
27  
28  
29  
30  
31  
32 empathy/compassion and organ donor registration.  
33  
34  
35

### 36 **Clinicians' Attitudes Towards Living Donation: Twenty-eight percent of UK**

37  
38  
39 kidney donations currently come from living donors (NHSBT, 2017/2018). There  
40  
41  
42 exists wide variation in non-directed living donation rates across transplant centres  
43  
44  
45 which may reflect clinicians' attitudes to non-directed donors, which are polarized  
46  
47  
48 between seeing them as extremely altruistic or psychiatrically disturbed (Henderson  
49  
50  
51 et al., 2003). However, comparisons of directed versus non-directed UK kidney  
52  
53  
54  
55  
56  
57  
58

---

59 <sup>4</sup> Singapore operates a priority system, with those on the organ donation register given greater priority to organs  
60 if needed. This powerful default is likely to over-ride other factors.

1  
2  
3  
4 donors have found no difference in psychiatric history, personality, or current  
5  
6  
7 depression, anxiety, stress, self-esteem, or well-being. Importantly, no differences in  
8  
9  
10 donors' physical outcomes were found and non-directed donors recovered from the  
11  
12  
13 operation slightly quicker (Maple et al., 2014).  
14  
15  
16

## 17 **Intervention to Promote Blood and Organ Donation**

### 18 **Blood Donation**

19  
20  
21  
22  
23 As there is a clear blood donor career, we explore interventions targeted prior  
24  
25  
26 to donation (to recruit and retain donors), as well as during donation (donor safety  
27  
28  
29 and satisfaction) (Ferguson, et al., 2007; van Dongen, 2015).  
30  
31  
32  
33

34 **Interventions for Recruitment and Retention:** A number of techniques have  
35  
36  
37 been used to enhance both recruitment and retention such as use of reminders  
38  
39  
40 (letters, texts, emails), social motivational interventions to enhance positive attitudes  
41  
42  
43 of altruism (usually messages and slogans such as 'do something amazing, save a  
44  
45  
46 life'), and techniques such as 'foot-in-the-door' (i.e. asking for a small commitment to  
47  
48  
49 donate initially, then for a subsequent larger one). A meta-analysis of these  
50  
51  
52 interventions undertaken by Godin et al. (2012) showed that, overall, reminders were  
53  
54  
55 quite effective (OR = 1.91,  $r = .69$ ), as were foot-in-the-door techniques (OR = 1.86,  $r$   
56  
57  
58  
59  
60

1  
2  
3  
4 = .68) and cognitive based social motivations (OR = 2.47,  $r = .77$ ). Godin et al.  
5  
6

7 showed that altruism-based interventions had the largest effect size (OR = 3.89,  $r =$   
8  
9

10 .89). However, while coded as altruism, Ferguson et al. (2007) had previously  
11  
12

13 argued that these 'altruism' based interventions are in fact tapping 'impure' rather  
14  
15

16 than 'pure' altruism.  
17  
18  
19  
20

21 Evidence suggests that feedback on the success of a prosocial act increases  
22  
23

24 the likelihood of subsequent prosocial acts (Smith, Keating & Stotland, 1989). In  
25  
26

27 blood donation, providing text messages to donors saying that their blood has been  
28  
29

30 used, increases return rates by approximately 8% (Gemeilli, Carver, Garmm, Wright  
31  
32

33 & Davison, 2018).  
34  
35  
36  
37

38 Making a plan after donating, indicating when and where the donor's next  
39  
40

41 donation will be ('implementation intention') increases the likelihood of return  
42  
43

44 donations (Godin et al., 2013 & 2014; Wevers, Wigboldus, van den Hurk K, van  
45  
46

47 Baaren, & Veldhuizen, 2015). However, with appointment systems becoming more  
48  
49

50 common, additional interventions are needed to enhance the motivation to return  
51  
52

53 once an appointment has been made. Motivational interviewing is one promising  
54  
55

56 possibility with evidence that a motivational interview increased personal autonomy  
57  
58  
59  
60

1  
2  
3  
4 and intrinsic motivation, with both linked to increased likelihood of making a  
5  
6  
7 subsequent donation (France & France, 2018; France, France, Carlson, Frye, et al.,  
8  
9  
10 2017; France, France, Carlson, Himawan, et al., 2017). Finally, a recent feasibility  
11  
12  
13 study on the use of TTM stages and process tool to recruit blood donor has shown  
14  
15  
16 that such an approach would be acceptable and increase intentions to donate blood  
17  
18  
19  
20  
21 (Robbins et al., 2015).  
22  
23

24  
25 While showing promise, all these interventions focus on “cold” cognition, while  
26  
27  
28 the above review suggests that affect is important. Furthermore, they are all based  
29  
30  
31 on an assumption that blood donors are pure rather than impure altruists. Below,  
32  
33  
34 therefore, we consider some promising avenues for interventions based on affect  
35  
36  
37 and the impure altruistic donor.  
38  
39  
40  
41

42 Evidence shows that *anticipatory* guilt (guilt arising in advance of a future  
43  
44  
45 transgression, which can be avoided), rather than *reactive* guilt (guilt experienced  
46  
47  
48 when a transgression takes place), predicts intentions to donate blood (Renner,  
49  
50  
51 Lindenmeier, Tscheulin, & Drevs, 2013). However, if the activation of guilt is  
52  
53  
54 perceived as manipulative (“if people like you do not donate then there will be  
55  
56  
57 shortages”) it can lead to anger and reactance (Cotte, Coulter, & Moore, 2005). To  
58  
59  
60

1  
2  
3  
4 avoid this problem, Ferguson (2015a) and Ferguson and Lawrence (2015)  
5  
6  
7 suggested a form of message to engender prosocial guilt based on the models of  
8  
9  
10  
11 inequality aversion (Fehr & Schmidt, 1999). Such a message would state: “As  
12  
13  
14 someone in good health, you can help someone whose health is not as good as  
15  
16  
17 yours by donating blood”. There is some initial evidence that this form of message  
18  
19  
20  
21 may be effective (Ferguson, 2015b).  
22  
23  
24

25         As experiencing warm-glow becomes a more salient motivation in  
26  
27  
28 experienced donors, Ferguson (2015a) has argued that promoting warm-glow should  
29  
30  
31 be a more effective intervention for donor retention. Consistent with this, Ferguson et  
32  
33  
34 al. (2008) contrasted a warm-glow appeal with a pure-altruism appeal and showed  
35  
36  
37 that the warm-glow appeal increased willingness to donate in those who committed  
38  
39  
40 to donate blood. Further, interventions that reactivate the feelings of ‘warm-glow’  
41  
42  
43 after donating are also a promising avenue to pursue (Ferguson, 2015). Currently an  
44  
45  
46 RCT is underway with the Australian Red Cross to test this (pre-registered with OSF:  
47  
48  
49 <https://osf.io/r8dca/>).  
50  
51  
52  
53  
54  
55

56         Similarly, a simple ‘thank-you’ that likely engenders feelings of *gratitude*  
57  
58  
59 should be an effective intervention (Ma et al., 2017) and there is some evidence, in  
60

women, that this is the case compared to an implementation intention or reward

(Myhal, Godin & Dubuc, 2017).

As blood donors can be characterised as impure altruists, financial incentives could be beneficial (Ferguson, 2015). While it has been argued that financial incentives (i.e., 'blood money') may de-motivate ("crowd-out") intrinsically experienced donors (Titmuss, 1970), framing the transaction as a 'social exchange' (i.e., the donor provides a 'gift of life' and the blood service thanks them with a gift), may be effective (Mauss, 1990; Sharp & Randhawa, 2014). This approach has been explored in two ways, either as a (1) 'gift voucher' in return for donation ('*Gift Exchange*': Lacetera, Macis, & Slonim, 2013, 2014) or (2) financial gift that can be donated to another health charity ('*Charity Option*': Mellstrom & Johannesson, 2008; Sass, 2013). The opportunity to help another charity in exchange for donating blood should provide the opportunity to gain *extra warm-glow*. When incentives were given for a pre-donation health check, evidence to-date suggests that a charity option has a neutral effect, while a financial exchange leads to crowding-out in female donors (Mellstrom & Johannesson, 2008). In contrast, when focusing explicitly on a financial 'gift exchange' there is empirical support that donor attendance is proportional to the

1  
2  
3  
4 value of the gift card (Lacetera et al., 2013, 2014). While the financial 'gift exchange'  
5  
6  
7 seems promising, there is no real evidence for any systematic effects of other  
8  
9  
10 financial (e.g., tax relief) and non-financial (including time off work, cholesterol  
11  
12  
13 testing) incentives to donate blood (Chell, Davison, Masser & Jensen, 2018).  
14  
15  
16

### 17 **Interventions During Donation to Enhance Donor Experiences and Health:**

18  
19  
20  
21 How the donor feels or reacts (vasovagal reactions) while donating blood influences  
22  
23  
24 both their intentions and actual return (Bendall et al., 2013). Vasovagal reactions  
25  
26  
27 also have implications for the donor's health at their time of donation. Diverting  
28  
29  
30 attention away from anxiety provoking stimuli can have significant benefits  
31  
32  
33  
34 (Anderson, Baron & Logan, 1991). In the context of blood donation, donors who  
35  
36  
37 prefer avoidant coping strategies were less likely to experience negative reactions  
38  
39  
40  
41 when watching a movie while donating blood, and those who preferred vigilant  
42  
43  
44 coping were neither helped nor harmed by watching the movie (Bonk, France &  
45  
46  
47 Taylor, 2001). Similarly, mixed detrimental and beneficial findings have been  
48  
49  
50 reported for the presence of "easy listening" background music as a function of  
51  
52  
53 donation experience and vigilance coping (Ferguson, Singh, & Cunningham-Snell,  
54  
55  
56  
57  
58  
59  
60 1997).



1  
2  
3  
4 Repeated, rhythmic contraction of major muscle groups of the arms and legs -  
5  
6  
7  
8 applied muscle tension (AMT) – has been used successfully to treat fainting  
9  
10  
11 reactions in blood and injury phobia (e.g., Ost & Sterner, 1987). AMT has been  
12  
13  
14 applied to prevent negative reactions in blood donors (e.g., Ditto, France, Lavoie,  
15  
16  
17 Roussos & Adler, 2003). Meta-analytic evidence shows that while AMT did not  
18  
19  
20  
21 reduce vasovagal reactions as reported by the phlebotomist, it did result in a  
22  
23  
24 reduction in vasovagal symptoms (*Mean Difference* = -0.07,  $p = .02$ ) (Fisher et al.,  
25  
26  
27 2016). Furthermore, AMT is effective when performed at key points across the  
28  
29  
30  
31 donation process (when the needle is inserted, the needle is removed, and getting  
32  
33  
34 up from the chair) (Thijssen et al., 2018). There is some evidence that AMT increases  
35  
36  
37 intentions to return (*Mean Difference* = 2.87,  $p = .004$ ), but not actual return  
38  
39  
40  
41  
42 behaviour (*RR* = 1.02,  $p = .64$ ).  
43  
44

45  
46 Based on evidence that healthy individuals show increased vascular  
47  
48  
49 constriction and arterial constriction after consuming water (Scott, Greenwood,  
50  
51  
52 Gilbey, Stoker & Mary, 2001), the effect of pre-donation hydration on the experience  
53  
54  
55 of vasovagal reactions has been examined in blood donors (e.g., Newman et al.,  
56  
57  
58  
59 2006). Meta-analysis results show that pre-loading significantly reduces blood donor  
60

1  
2  
3  
4 vasovagal reactions as reported by the phlebotomist ( $RR 0.79, p < .0001$ ), as well as  
5  
6  
7 vasovagal type symptoms ( $MD = -0.32, p = .001$ ) (Fisher et al., 2016). There are no  
8  
9  
10 data at present linking water consumption directly to return rates. However, these  
11  
12  
13 techniques may have indirect effects on return rates via vasovagal symptoms and  
14  
15  
16 intentions (France et al., 2013).  
17  
18  
19  
20

21 **Interventions Targeted at Specific Groups:** Blood donation agencies face the  
22  
23  
24 need for increased specialization in donor recruitment to meet clinical needs. This is  
25  
26  
27 exemplified, as described above, by the need for increased donations from the  
28  
29  
30 BAME community. In terms of developing targeted recruitment campaigns for BAME  
31  
32  
33 donors, no unique *cultural specific motivating* factor that differentiates BAME  
34  
35  
36 donors/non-donors from non-BAME donors/non-donors has been identified (e.g.,  
37  
38  
39 Burzynski, Nam, & Le Vior, 2016; Tran, Charbonneau, & Valderrama-Benitez, 2013).  
40  
41  
42  
43 Altruism emerges as a motivator across all communities and may offer critical  
44  
45  
46 insights when considered within a cross-cultural perspective. First, BAME  
47  
48  
49 communities conceptualize altruism that focuses on reciprocity *within* the community  
50  
51  
52 rather than helping strangers, which is common in western cultures (Tran et al.,  
53  
54  
55  
56  
57  
58  
59 2013). Second, evidence shows that *lack of trust* in healthcare provision/medical  
60

1  
2  
3  
4 mistrust (Guerrero, Mendes de Leon, Evans, & Jacobs, 2015; Kimberly et al., 2013),  
5  
6  
7 and in transfusion services (e.g., Boenigk, Mews & de Kort, 2015; Boulware, Ratner,  
8  
9  
10 Cooper et al., 2002), is an important demotivating factor within BAME communities.  
11  
12  
13  
14 A focus on reducing medical mistrust would, therefore, appear to be a fruitful avenue  
15  
16  
17  
18 to pursue for interventions in this context.  
19  
20  
21

## 22 **Organ Donation**

23  
24  
25 Interventions for posthumous donation to-date have largely focused around  
26  
27  
28 legislative change (e.g., changing to an opt-out policy or prioritising transplant  
29  
30  
31 candidates who have shown commitment to organ donation: Sallis, Harper, &  
32  
33  
34  
35 Sanders, 2018).  
36  
37  
38

39  
40 **Legislative Approaches - "Opt-In Versus Opt-Out":** Many governments have  
41  
42 moved to an 'opt-out' default (i.e., presumed consent to organ donation, unless an  
43  
44 individual actively opts out) from an 'opt-in default' (i.e., the default is to be a non-  
45  
46 donor unless one actively registers). Some countries (e.g., Austria) have a "hard-opt-  
47  
48  
49 out system" where the registration will be followed, regardless of the families' wishes,  
50  
51  
52  
53  
54  
55  
56  
57 whereas other countries (e.g., Spain) offer a "soft opt-out" system whereby families  
58  
59  
60

1  
2  
3  
4 of potential donors are given the chance to refuse (Reinders, van Kooten, Rabelink,  
5  
6  
7 & de Fijter, 2018).

10  
11 It has been shown that, on average, changing the default to an opt-out system  
12  
13  
14 leads to an increase in donation rates (Bilgel, 2012; Johnson & Goldstein, 2003;  
15  
16  
17  
18 Rithalia, Myers & Snowden, 2009; Ugur, 2015) and this change is supported by  
19  
20  
21  
22 public opinion (Moseley & Stoker, 2015; Rockloff & Hanley, 2014; van Dalen &  
23  
24  
25  
26 Henkens, 2014). However, while, on average, opt-out is associated with higher  
27  
28  
29 deceased donations, compared to opt-in, it is also associated with lower living  
30  
31  
32  
33 donations (Shepherd, O'Carroll & Ferguson, 2014). Indeed, there are a number of  
34  
35  
36  
37 other concerns about moving to an opt-out default that detract from its actualized  
38  
39  
40 effectiveness (see McCartney, 2017; Wellesley, 2011; Willis & Quigley, 2014). The  
41  
42  
43 main concerns (Table 3) with an opt-out system include: (1) an epidemiological focus  
44  
45  
46 on the average that obscures important cross-country variance, with many opt-out  
47  
48  
49 countries performing less well than opt-in countries, (2) reduced living donation  
50  
51  
52  
53 rates, (3) difficulty interpreting what passively not opting-out means in terms of the  
54  
55  
56  
57 donor's true preference to be a donor, (4) moral objections relating to 'state'  
58  
59  
60

1  
2  
3  
4 ownership of organs and lack of autonomy, (5) potential negative consequences of  
5  
6  
7 the 'lone wolf effect' whereby people are more likely to follow the lead of others de-  
8  
9  
10 registering, as signalled by posts on social media for example, and opt-out and (6)  
11  
12  
13 inability to establish causality. Furthermore, while the Spanish system is widely  
14  
15  
16 heralded as a great illustration of the success of an opt-out system, having now  
17  
18  
19 achieved 40 deceased donors per million (Matesanz, Gil, Coll, Mahillo & Marazuela,  
20  
21  
22 2017), Spain does **not** have an opt-out register for those who do not wish to become  
23  
24  
25 organ donors. The presumed consent law in Spain is thus dormant. In these  
26  
27  
28 circumstances, Spain's world-leading deceased organ donor rate cannot be  
29  
30  
31 attributed an opt-out system (Fabre, Murphy & Matesanz, 2010). Instead, the  
32  
33  
34 pioneers of the "Spanish model" attribute its success to three main features: (1)  
35  
36  
37 promoting early referral of donors from outside intensive care unit and incorporating  
38  
39  
40 the option of organ donation into end-of-life care, (2) expanding the criteria for organ  
41  
42  
43 use (e.g., from older donors), and (3) developing donation after circulatory death  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53 (Matesanz et al. 2017).  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 Many countries have implemented a soft opt-out system where removal of  
5  
6  
7 organs goes ahead only with family agreement. Indeed, under an opt-in system, the  
8  
9  
10 UK has one of the highest family refusal rates for organ donation in the world, with  
11  
12  
13 34% of families currently refusing. This will possibly be higher under an opt-out  
14  
15  
16 system where it may be impossible for relatives to infer the true preference of the  
17  
18  
19 potential donor. While Vincent and Logan (2012) suggested a set of potentially  
20  
21  
22 modifiable factors relating to the family approach, the uncertainty that deemed  
23  
24  
25 consent brings is hard to overcome. Importantly, family members often later regret  
26  
27  
28 not giving consent (see Burroughs, Hong, Kappel & Freedman, 1998; Rodrigue,  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Cornell & Howard, 2008).

**Increasing Registrations Within an Opt-in System:** If an opt-out system does  
not solve the organ shortage problem, it could be argued that the focus should be to  
improve registration and donation rates under an opt-in system. Since 2009 under  
the UK opt-in system, there has been a steady annual increase in the number of  
registered donors, increasing from 16.1 million in 2009 to 24.9 million in 2018  
(NHSBT, 2017-2018).

1  
2  
3  
4 One option to further enhance this growth is by using *social media* (e.g.,  
5  
6  
7 WhatsApp, Facebook, Twitter). Social media, as well as web-based and print media  
8  
9  
10  
11 opinion and comment, play an important role in organ donor recruitment that can be  
12  
13  
14 capitalized on (Aykas, Uslu & Simsek, 2015; Bail, 2016; Bramstedt & Cameron,  
15  
16  
17 2017; Brzezinski & Klikowicz, 2015; Cameron et al., 2013). A good example of this is  
18  
19  
20  
21 a *Facebook* campaign that gave individuals the opportunity to post status updates  
22  
23  
24 with respect to their organ donor registration which resulted in increased  
25  
26  
27  
28 registrations (Cameron et al., 2013). Thus, rather than an expensive change to an  
29  
30  
31 opt-out system, resources are perhaps better spend enhancing the opt-in system  
32  
33  
34 with social media used to increase registrations under an opt-in system.  
35  
36  
37  
38

39 *Reciprocal altruism* is another potential effective mechanism to increase  
40  
41  
42 organ donor registration under an opt-in system (Landry, 2006). Reciprocal altruism  
43  
44  
45 (direct and indirect) has a selfish component (Ma et al., 2017; Nowak, 2006), thus  
46  
47  
48  
49 Landry proposed that campaigns should appeal to individuals' self-interest but  
50  
51  
52  
53 balance this against their desire to do what is fair and just. He termed this voluntary  
54  
55  
56 reciprocal altruism (VRA). This is achieved by asking people to consider if they  
57  
58  
59  
60

1  
2  
3  
4 would 'accept' an organ if they needed one, highlighting self-interest ('you may need  
5  
6  
7 an organ') and reciprocity and fairness ('if we do not register to give there may not be  
8  
9  
10 a sufficient supply for us all'). These ideas gained some support in a pilot study  
11  
12  
13  
14 which showed that medical students' intentions to donate were higher following  
15  
16  
17 exposure to a VRA message (Landry, 2006). Developing on this, O'Carroll, Haddow,  
18  
19  
20 Foley, and Quigley (2017) and O'Carroll, Quigley and Miller (2018) showed that non-  
21  
22  
23 registered participants exposed to a VRA message, compared to controls, reported  
24  
25  
26 greater intentions to register. The effect of VRA on behaviour (donor registration)  
27  
28  
29 was demonstrated by the results from a large scale (1 million participants) trial  
30  
31  
32 comparing nine different messages on UK driving license application web pages. A  
33  
34  
35 VRA message ("If you needed an organ transplant, would you have one? If so,  
36  
37  
38 please help others") was the most successful, followed by a loss framed message  
39  
40  
41 ("Three people die every day because there are not enough organs") (Sallis et al., 2018).  
42  
43  
44  
45 Norm based strategies ("Every day thousands of people who see this page decide to  
46  
47  
48 register") were the least successful, and when combined with an image of people,  
49  
50  
51 norm-based strategies had a detrimental effect, resulting in a reduction in donor  
52  
53  
54  
55  
56  
57  
58  
59  
60 registrations (Sallis et al., 2018). The UK NHSBT advertising campaign currently



1  
2  
3  
4 uses VRA, asking “If you needed an organ transplant would you have one?”(NHSBT,  
5  
6  
7 2016).

11 *Anticipated regret* (AR) is an example of an anticipated affective reaction.

14 Asking people to anticipate possible future regret is a potentially powerful behaviour  
15  
16  
17  
18 change technique (Brewer, DeFrank & Gilkey, 2016). O’Carroll, Dryden, et al. (2011)  
19  
20  
21 and O’Carroll, Foster, et al. (2011) assessed the impact of a simple AR intervention,  
22  
23  
24  
25 showing that intention to join the UK ODR was significantly higher for participants  
26  
27  
28 asked to rate possible AR compared with a control condition. However, a  
29  
30  
31  
32 subsequent large-scale trial with 14,509 members of the Scottish public which  
33  
34  
35 measured actual registrations, found significantly *lower* registrations in the AR arm  
36  
37  
38 compared to a pure control (O’Carroll, Shepherd, Hayes, & Ferguson, 2016). In  
39  
40  
41  
42 attempting to understand why the brief AR intervention led to a significant decrease  
43  
44  
45 in registrations, the authors speculated that as those in the active arms completed  
46  
47  
48 items assessing affective responses in relation to organ donation (e.g., jinx) and  
49  
50  
51 control participants did not, they were ‘primed’ to consider negative beliefs about  
52  
53  
54 organ donation. To test this possibility, Doherty, Dolan, Flynn, O’Carroll, and Doyle  
55  
56  
57 (2017) found that omitting negative affective items resulted in higher intention to  
58  
59  
60

1  
2  
3  
4 donate organs and marginally higher rates of acceptance of organ donor cards  
5  
6  
7 (proxy measure of behaviour). These findings suggest that questions about negative  
8  
9  
10 affective responses require careful consideration and should probably be omitted in  
11  
12  
13  
14 public health campaigns attempting to increase organ donor registration (Doherty et  
15  
16  
17  
18 al., 2017).

21 **Community Based Interventions:** Golding and Cropley (2017) conducted a  
22  
23  
24 narrative systematic review of psychological interventions designed to increase the  
25  
26  
27  
28 number of individuals in the community who register as organ donors. They identified  
29  
30  
31  
32 24 studies, 19 of which found a positive intervention effect, but only 8 were rated as  
33  
34  
35 being methodologically robust. The previously cited study by Alvaro et al. (2011),  
36  
37  
38 which provided an immediate registration opportunity (ICRO), was found to be the  
39  
40  
41  
42 most effective with an OR of 5.9.

45 **Primary Care Interventions:** Pedder-Jones, Papadopoulos and Randhawa  
46  
47  
48 (2017) showed that successful interventions in primary care were characterised by  
49  
50  
51  
52 active participant engagement and those that encouraged donation at the point of  
53  
54  
55  
56 patient contact (ICRO).  
57  
58  
59  
60

1  
2  
3  
4 **“Myth-Busting”**: Myths or incorrect beliefs (e.g., “Doctors may not try their best  
5  
6  
7 to save my life if I am registered as an organ donor”) are common deterrents of  
8  
9  
10 organ donation registration. Miller, Currie and O’Carroll (2018) recently evaluated the  
11  
12 effectiveness of myth correcting interventions. They found that for participants who  
13  
14 plan to opt-in to the organ donor register or passively register (deemed consent),  
15  
16  
17  
18  
19  
20  
21  
22 dispelling myths acted to increase donor intentions. However, for the group the  
23  
24  
25 intervention is aimed at (i.e., those who plan to opt-out or are unsure), dispelling  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

32 **Xenotransplantation**: A very different intervention to reduce the organ  
33  
34  
35 shortage is to move to a source of organs other than humans: *Xenotransplantation*  
36  
37  
38 (Denner, 2014). Recent advances in engineering pig (the most suitable organism for  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

The potential endless supply of organs offers a real solution to the organ shortage

1  
2  
3  
4 (Harris et al., 2014; Hryhorowicz, Zeyland, Slomski, & Lipinski, 2017). However,  
5  
6  
7 there is an urgent need to assess acceptability to patients and relatives.  
8  
9

10  
11 **Correlated Behaviours:** Blood and organ donation behaviours are consistently  
12  
13  
14 correlated across countries (Ferguson et al., in press). This implies that recruiting  
15  
16  
17 organ donors from blood donors, or vice-versa, is a distinct possibility. Indeed, in  
18  
19  
20 some countries (e.g., Australia) blood donors are encouraged to become organ  
21  
22  
23 donors (<https://www.donateblood.com.au/learn/organ-tissue-donation>).  
24  
25  
26  
27  
28

### 29 **Common Themes**

30  
31  
32

33 While blood and organ donation are both health-based voluntary philanthropic  
34  
35  
36 acts, they are different in a number of ways (Table 1), have different predictors, and  
37  
38  
39 require unique interventions. There are, however, a number of communalities that  
40  
41  
42  
43 can be identified across the two that suggest common themes.  
44  
45  
46

47 **Emotions and Empathy Gaps.** A key emerging theme from the review on blood and  
48  
49  
50 organ donation is the role of emotional experiences. Such processes tend to be  
51  
52  
53  
54 dynamic – blood donors cycle through a number of donations, and people consider  
55  
56  
57 registering as an organ donor and then register or not. Thus, we need to consider  
58  
59  
60

1  
2  
3  
4 this dynamic emotional journey and *empathy gaps* offer one theoretical tool to do  
5  
6  
7 this. An *empathy gap* emerges when people have difficulty in predicting how they will  
8  
9  
10 act in an emotional state different to their current one (Loewenstein, 2000). Important  
11  
12  
13 to this discussion are *prospective hot-cold* and *cold-hot* empathy gaps. Prospective  
14  
15  
16 gaps refer to how well people predict their future behaviour, when in a different  
17  
18  
19 emotional state to their current one. Hot-cold gaps are experienced when people in  
20  
21  
22 an aroused emotional state underestimate how their current emotions influence their  
23  
24  
25 decisions. In cold-hot gaps, people in a cold emotional state under-estimate how their  
26  
27  
28 emotions in an aroused state will influence their behaviour. There are *cold-hot*  
29  
30  
31 *prospective* empathy gaps in both blood and organ donation behaviour. For blood  
32  
33  
34 donation this focuses on people's prospective prediction that they may faint when  
35  
36  
37 donating blood. Indeed, the potential blood donor's emotional responses are very  
38  
39  
40 different depending on whether or not they can observe images and equipment  
41  
42  
43 associated with blood donation (Clowes & Masser, 2012; Masser, France, Himawan,  
44  
45  
46 Hyde, & Smith, in press), with anxiety being higher when blood donation  
47  
48  
49 paraphernalia are present. Similarly, *cold-hot prospective* empathy gaps are likely to  
50  
51  
52 be present in relation to deceased organ donation registration. That is, while people  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4 express a positive attitude towards organ donation (70% or more) in the UK, only  
5  
6  
7 approximately 38% register. Reflecting a possible cold-hot prospective empathy gap,  
8  
9  
10  
11 people may feel more negative emotions when it comes to signing up on the organ  
12  
13  
14 donor register than they anticipated, and this is sufficient to prevent them from  
15  
16  
17  
18 registering.  
19  
20  
21

22           There are also *hot-cold retrospective empathy-gaps* in both blood and deceased  
23 organ donation. The blood donor in the hot after-glow of donation, may over estimate  
24  
25  
26 their likelihood of return, but as they emotionally cool-off they may recall the donation  
27  
28  
29 less positively. Thus, interventions to enhance blood donors' recall of post-donation  
30  
31  
32  
33 positive affect would be a useful avenue to pursue. Ferguson and Masser (2018)  
34  
35  
36 provide a detailed theoretical account of the application of empathy gaps to blood  
37  
38  
39 donor research. Applying *hot-cold retrospective empathy-gaps* may also explain why  
40  
41  
42  
43 many family members express regret for earlier decisions not to consent to organ  
44  
45  
46  
47 donation from their relatives (Rodrigue et al. 2008), as their decision was made in a  
48  
49  
50 hot emotional state and later reflected on in a cold emotional state.  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3  
4 mechanisms to boost organ donor registrations under an opt-in default may be more  
5  
6  
7 successful, especially if combined with a VRA manipulation or social media updates.  
8  
9

## 10 11 **References**

- 12  
13 Alfieri, S., Paolo, G., Marta, E., & Saturni, V. (2016). Economic crisis  
14  
15 and blood donation: How are donors' motivations changing? *Transfusion and*  
16  
17 *Apheresis Science*, *55*(3), 396-400.
- 18  
19  
20  
21 Allpress, J. A., Brown, R., Giner-Sorolla, R., Deonna, J. A., & Teroni, F. (2014). Two  
22  
23 faces of group-based shame: moral shame and image shame differentially  
24  
25 predict positive and negative orientations to in-group wrongdoing. *Personality*  
26  
27 *and Social Psychology Bulletin*, *40*(10), 1270-1284.
- 28  
29  
30  
31 Alvaro, E. M., Siegel, J. T., & Jones, S. P. (2011). Increasing organ donor  
32  
33 registration rates by providing an immediate and complete registration  
34  
35 opportunity: An experimental assessment of the IIFF model. *Psychology, Health*  
36  
37 *and Medicine*, *16*(6), 686–694.
- 38  
39  
40  
41 Amodio, D. M., Devine, P. G., & Harmon-Jones, E. (2007). A dynamic model of guilt:  
42  
43 Implications for motivation and self-regulation in the context of prejudice.  
44  
45 *Psychological Science*, *18*(6), 524-530.
- 46  
47  
48  
49 Amoyal, N. R., Robbins, M. L., Paiva, A. L., Burditt, C., Kessler, D., & Shaz, B. H.  
50  
51 (2013). Measuring the processes of change for increasing blood donation  
52  
53 in black adults. *Transfusion*, *53*(6), 1280-1290.  
54  
55  
56  
57  
58  
59  
60



- 1  
2  
3  
4 Anderson, R., Baron, R. S., & Logan, H. (1991). Distraction, control, and dental  
5  
6 stress. *Journal of Applied Social Psychology, 21*(2), 156-171.  
7  
8  
9 Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of  
10  
11 warm glow giving. *The Economic Journal, 100*(401), 464-487.  
12  
13  
14 Atsma, F., Veldhuizen, I., Verbeek, A., de Kort, W., & de Vegt, F. (2011). Healthy  
15  
16 donor effect: Its magnitude in health research among blood donors. *Transfusion,*  
17  
18 *511*(8), 1820-1828.  
19  
20  
21  
22 Aykas, A., Uslu, A., & Simsek, C. (2015). Mass media, online social networks, and  
23  
24 organ donation: Old mistakes and new perspective's. *Transplantation*  
25  
26 *Proceedings, 47*(4), 1070-1072.  
27  
28  
29  
30 Bail, C. A. (2016). Cultural carrying capacity: Organ donation advocacy, discursive  
31  
32 framing. and social media engagement. *Social Science and Medicine, 165*, 280-  
33  
34 288.  
35  
36  
37  
38 Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*  
39  
40 (pp. 1-257). Hillsdale, NJ: Erlbaum.  
41  
42  
43 Bendall, T.C., & Bove, L.L. (2011). Donating blood: a meta-analytic review of self-  
44  
45 reported motivators and deterrents, *Transfusion Medicine Reviews, 25*(4), 317-  
46  
47 334.  
48  
49  
50  
51 Bednall, T. C., Bove, L. L., Cheetham, A., & Murray, A. L. (2013). A systematic  
52  
53 review and meta-analysis of antecedents of blood donation behavior and  
54  
55 intentions. *Social Science and Medicine, 96*, 86-94.  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Bekkers, R. (2006). Traditional and health-related philanthropy: The role of  
5  
6 resources and personality. *Social Psychology Quarterly*, 69(4), 349–366.  
7  
8  
9 Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2008). How are preferences  
10  
11 revealed? *Journal of Public Economics*, 92(8-9), 1787-1794.  
12  
13  
14 Bilgel, F. (2012). The impact of presumed consent laws and institution on deceased  
15  
16 organ donation. *European Journal of Health Economics*, 13(1), 29-38.  
17  
18  
19 Boenigk, S., Mews, M., & de Kort, W. (2015). Missing minorities: Explaining low  
20  
21 migrant blood donation participation and developing recruitment tactics.  
22  
23  
24 *Voluntas*, 26(4), 1240-1260.  
25  
26  
27 Bonk, V. A., France, C. R., & Taylor, B. K. (2001). Distraction reduces self-reported  
28  
29 physiological reactions to blood donation on novice donors with a blunting coping  
30  
31 style. *Psychosomatic Medicine*, 63(3), 447-452.  
32  
33  
34  
35 Boulware, L. E., Ratner, L. E., Cooper, L. A., Sosa, J. A., LaVeist, T. A., & Powe, N.  
36  
37 R. (2002). Understanding disparities in donor behavior: Race and gender  
38  
39 differences in willingness to donate blood and cadaveric organs. *Medical Care*,  
40  
41  
42  
43  
44  
45 40(2), 85-95.  
46  
47  
48 Bove, L. L., Bednall, T., Masser, B., & Buzza, M. (2011). Understanding the  
49  
50 plasmapheresis donor in a voluntary, nonremunerated environment. *Transfusion*,  
51  
52  
53 51(11), 2411-2424.  
54  
55  
56 Bramstedt, K. A., & Cameron, A. M. (2017). Beyond the billboard: The Facebook-  
57  
58 based application, donor, and its guided approach to facilitating living organ  
59  
60 donation. *American Journal of Transplantation*, 17(2), 336-340.

- 1  
2  
3  
4 Brewer, N. T., DeFrank, J. T., & Gilkey, M. B. (2016). Anticipated regret and  
5  
6 behaviour change: A meta-analysis. *Health Psychology, 35*(11), 1264-1275.  
7  
8  
9 Brittenham, G. M. (2011). Iron-chelating therapy for transfusional iron overload. *The*  
10  
11 *New England Journal of Medicine, 364*(2), 146-156.  
12  
13  
14 Brzezinski, M., & Klikowicz, P. (2015). Facebook as a medium for promoting  
15  
16 statement of intent for organ donation: 5-years of experience. *Annals of*  
17  
18 *Transplantation, 20*, 141-146.  
19  
20  
21  
22 Bshary, R., & Bergmüller, R. (2008). Distinguishing four fundamental approaches to  
23  
24 the evolution of helping. *Journal of Evolutionary Biology, 21*(2), 405-420.  
25  
26  
27 Burditt, C., Robbins, M. L., Paiva, A., Velicer, W. F., Koblin, B., & Kessler, D. (2009).  
28  
29 Motivation for blood donation among African Americans: Developing measures  
30  
31 for stage of change, decisional balance, and self-efficacy constructs. *Journal of*  
32  
33 *Behavioural Medicine, 32*(5), 429-442.  
34  
35  
36  
37  
38 Burroughs, T. E., Hong, B. A., Kappel, D. F., & Freedman, B. K. (1998). The stability  
39  
40 of family decisions to consent or refuse organ donation: Would you do it again?  
41  
42 *Psychosomatic Medicine, 60*(2), 156-162.  
43  
44  
45  
46 Burzynski, E. S., Nam, L. S., & Le Vior, R. (2016). Barriers and motivations to  
47  
48 voluntary blood donation in sub-Saharan African settings; A literature review.  
49  
50 *ISBT Science Series, 11*(2), 73-81.  
51  
52  
53  
54 Cameron, A. M., Massie, A. B., Alexander, C. E., Stewart, B., Montgomery, R. A.,  
55  
56 Benavides, N. R., ... Segev, D. L. (2013). Social media and organ donation  
57  
58  
59  
60

1  
2  
3  
4 registration: The Facebook effect. *American Journal of Transplantation*, 13(8),  
5  
6 2059-2065.  
7

8  
9 Carter, M. C., Wilson, J., Redpath, G. S., Hayes, P., & Mitchell, C. (2011). Donor  
10  
11 recruitment in the 21<sup>st</sup> century: Challenges and lessons learned in the first  
12  
13 decade. *Transfusion and Apheresis Science*, 45(1), 31-43.  
14  
15

16  
17 Chell, K., Davison, T. E., Masser, B., & Jensen, K. (2018). A systematic review of  
18  
19 incentives in blood donation. *Transfusion*, 58(1), 242-254.  
20  
21

22  
23 Chell, K., Waller, D., & Masser, B. (2016). The Blood Donor Anxiety scale: A six-item  
24  
25 anxiety measure based on the Spielberger State-Trait Anxiety inventory.  
26  
27 *Transfusion*, 56(6,2), 1645-1653.  
28  
29

30  
31 Chliaoutakis, J., Trakas, D. J., Socrataki, F., Lemonidou, C., & Papaioannou, D.  
32  
33 (1994). Blood donor behaviour in Greece: Implications for health policy. *Social*  
34  
35 *Science and Medicine*, 38(10), 1461-1467.  
36  
37

38  
39 Clary, E. G., & Snyder, M. (1999). Motivations to volunteer: Theoretical and practical  
40  
41 considerations. *Current Directions in Psychological Science*, 8(5), 156-159.  
42

43  
44 Clary, E. G., Snyder, M., Ridge, R. D., Copeland, J., Stukas, A. A., Haugen, J., &  
45  
46 Miene, P. (1998). Understanding and assessing the motivations of volunteers: A  
47  
48 functional Approach. *Journal of Personality and Social Psychology*, 74(6), 1516-  
49  
50 1530.  
51  
52

53  
54 Clowes, R., & Masser, B. M. (2012). Right here, right now: The impact of the blood  
55  
56 donation context on anxiety, attitudes, subjective norms, self-efficacy, and  
57  
58 intention to donate blood. *Transfusion*, 52(7), 1560-1565.  
59  
60

1  
2  
3  
4 Conner, M., Godin, G., Sheeran, P., & Germain, M. (2013). Some feelings are more  
5  
6 important: Cognitive attitudes, affective attitudes, anticipated affect, and blood  
7  
8 donation. *Health Psychology, 32*(3), 264-72.  
9

10  
11  
12 Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-*  
13  
14 *R) and NEO Five-Factor Inventory (NEO-FFI) manual*. Odessa, FL:  
15  
16 Psychological Assessment Resources.  
17

18  
19  
20 Cotte, J., Coulter, R. A., & Moore, M. (2005). Enhancing and disrupting guilt: The  
21  
22 role of ad credibility and perceived manipulative intent. *Journal of Business*  
23  
24 *Research, 58*(3), 361-368.  
25

26  
27  
28 Csillag, C. (1998). Brazil abolishes “presumed consent” in organ donation. *The*  
29  
30 *Lancet, 352*(9137), 1367.  
31

32  
33  
34 Demir, B., & Kumkale, G. T. (2013). Individual differences in willingness to become  
35  
36 an organ donor: A decision tree approach to reasoned action. *Personality and*  
37  
38 *Individual Differences, 55*(1), 63–69.  
39

40  
41  
42 Denner, J. (2014). Xenotransplantation – progress and problems: A review. *Journal*  
43  
44 *of Transplantations Technologies and Research, 4*(2), article: 1000133.  
45

46  
47  
48 Di Angelantonio, E., Thompson, S.G., Kaptoge, S., Moore, C, Walker, M., Armitage,  
49  
50 J., ... INTERVAL Trial Group. (2017). Efficiency and safety of varying the  
51  
52 frequency of whole blood donation (INTERVAL): A randomised trial of 45 000  
53  
54 donors. *Lancet, 390*(10110), 2360-2371.  
55  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Ditto, B., & France, C.R. (2006). Vasovagal symptoms mediate the relationship  
5  
6 between predonation anxiety and subsequent blood donation in female  
7  
8 volunteers. *Transfusion*, 46(6), 1006-1010.  
9  
10  
11 Ditto, B., France, C. R., Lavoie, P., Roussos, M., & Adler, P. S. (2003). Reducing  
12  
13 reactions to blood donation with applied muscle tension: a randomized controlled  
14  
15 trial. *Transfusion*, 43(9), 1269-1275.  
16  
17  
18  
19 Doherty, S., Dolan, E., Flynn, J., O'Carroll, R., & Doyle, F. (2017). Circumventing the  
20  
21 "Ick" factor: A randomized trial of the effects of omitting affective attitudes  
22  
23 questions to increase intention to become an organ donor. *Frontiers in*  
24  
25 *Psychology*, 8, Art. No.: 1443.  
26  
27  
28  
29 Evans, R., & Ferguson, E. (2014). Defining and measuring blood donor altruism: A  
30  
31 Theoretical approach from biology, economics and psychology. *Vox Sanguinis*,  
32  
33 106(2), 118-126.  
34  
35  
36  
37 Fabre, J., Murphy, P., & Matesanz, R. (2010). Presumed consent: A distraction in the  
38  
39 quest for increasing rates of organ donation. *British Medical Journal*,  
40  
41 341, c4973.  
42  
43  
44  
45 Falomir-Pichastor, J. M., Berent, J. A., & Pereira, A. (2013). Social psychological  
46  
47 factors of post-mortem organ donation: A theoretical review of determinants and  
48  
49 promotion strategies, *Health Psychology Review*, 7(2), 202-247.  
50  
51  
52  
53 Fehr, E. (2009). On the economics and biology of trust. *Journal of the European*  
54  
55 *Economic Association*, 7(2-3), 235-266.  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Fehr, E., & Fischbacher, U. (2004a). Third-party punishment and social norms.  
5  
6 *Evolution and Human Behavior, 25*, 63-87.  
7  
8  
9 Fehr, E., & Fischbacher, U. (2004b). Social norms and human cooperation. *Trends*  
10  
11 *in Cognitive Science, 8*(4), 185-190.  
12  
13  
14 Fehr, E., & Schmidt, K. M. (1999). A theory of fairness, competition and cooperation.  
15  
16 *Quarterly Journal of Economics, 114*(3), 817-868.  
17  
18  
19 Ferguson, E. (1996). Predictors of future behaviour: A review of the psychological  
20  
21 literature on blood donation. *British Journal of Health Psychology, 1*(4), 287-308.  
22  
23  
24 Ferguson, E. (2015a). Mechanism of altruism approach to blood donor recruitment  
25  
26 and retention: A review and future directions. *Transfusion Medicine, 25*(4), 211-  
27  
28 226  
29  
30  
31  
32 Ferguson, E (2015b). *Blood Donation and Altruism*. 25<sup>th</sup> Regional Congress of the International  
33  
34 Society of Blood Transfusion (ISBT), London, United Kingdom June 27 - July 1  
35  
36 Ferguson, E., Atsma, F., de Kort, W., & Veldhuizen, I. (2012b). Exploring the pattern  
37  
38 of blood donor beliefs in first time, novice and experienced donors:  
39  
40 Differentiating reluctant altruism, pure altruism, impure altruism and warm-glow,  
41  
42 *Transfusion, 52*(2), 343-355.  
43  
44  
45  
46 Ferguson, E., & Bibby, P. A. (2002). Predicting future blood donor returns: Past  
47  
48 behavior, intentions, and observer effects. *Health Psychology, 21*(5), 513-518.  
49  
50  
51 Ferguson, E., & Chandler, S. (2005). A stage model of blood donor behaviour:  
52  
53 Assessing volunteer behaviour. *Journal of Health Psychology, 10*(3), 359-372.  
54  
55  
56 Ferguson, E., Dorner, L., France, C. R., France, J. L., Masser, B., Lam, M., Marta,  
57  
58 E., Alfieri, S., Merz, E-M., Adams, B., Huis in 't Veld, E., & Scerri, J. (*In press*).  
59  
60

Blood donor behaviour, motivations and the need for a systematic cross-cultural perspective: The example of moral outrage and health and non-health based philanthropy across seven countries (*ISBT Science Series*)

Ferguson, E., Farrell, K., & Lawrence, C. (2008). Blood donation is an act of benevolence rather than altruism. *Health Psychology, 27*(3), 327-336.

Ferguson, E., & Flynn, N. (2016). Moral relativism as a disconnect between behavioural and experienced warm glow. *Journal of Economic Psychology, 56*, 163-175.

Ferguson, E., France, C. R., Abraham, C., Ditto, B., & Sheeran, P. (2007). Improving blood donor recruitment and retention: Integrating social and behavioral science agendas. *Transfusion, 47*(11), 1999-2010.

Ferguson, E., & Lawrence, C. (2015). Blood donation and altruism: The mechanism of altruism approach. *ISBT Science Series, 11*(S1), 148–157.

Ferguson, E., & Lawrence, C. (2018). It is only fair: Blood donors are more sensitive to violations of fairness norms than non-donors – converging psychometric and ultimatum game evidence. *Vox Sanguinis, 113*(3), 224-250.

Ferguson, E., & Masser, B. (2018). Emotions and pro-sociality: Lessons for blood donation. In D. M. Williams, R. E. Rhodes & M. T. Conner (Eds.), *Affective Determinants of Health-Related Behavior*. Oxford University Press

Ferguson, E., Shichman, R., & Tan, J. H. W. (2018). *The 'Lone wolf' Defector is Detrimental to Organ Donor Registration Rates When Moving to an Opt-Out Organ Registration Default: A Behavioral Economic Experiment*. 3<sup>rd</sup> European Conference on Donor Health and Management. Copenhagen, 5<sup>th</sup> to 7<sup>th</sup> September 2018.



- 1  
2  
3  
4 Ferguson, E., Singh, A., & Cunningham-Snell, N. (1997). Stress and blood donation:  
5  
6 Effects of music and previous donation experience. *British Journal of*  
7  
8  
9 *Psychology, 88*(2), 277-294.  
10  
11  
12 Ferguson, E., Taylor, M., Keatley, D., Flynn, N., & Lawrence, C. (2012a). Blood  
13  
14 donors' helping behavior is driven by warm glow more evidence for the blood  
15  
16 donor benevolence hypothesis. *Transfusion, 52*(10), 2189-2200.  
17  
18  
19 Ferguson, E., Zhao, K., O'Carroll, R. E., & Smillie, L. D. (2018). Costless and costly  
20  
21 pro-sociality: Correspondence among Personality traits, economic preferences,  
22  
23 and real world pro-sociality. *Social Psychological and Personality Science. (in*  
24  
25 *press)*.  
26  
27  
28  
29  
30 Fernandez, J. M., Howard, D. H., & Krose, L. S. (2013). The effects of cadaveric  
31  
32 kidney donations on living kidney donations: An instrumental variables approach.  
33  
34 *Economic Inquiry, 51*(3), 1696-1714.  
35  
36  
37  
38 Fisher, S. A., Allen, D., Doree, C., Naylor, J., Di Anelantonio, E., & Roberts, D. J.  
39  
40 (2016). Interventions to reduce vasovagal reactions in blood donors: A  
41  
42 systematic review and meta-analysis. *Transfusion Medicine, 26*(1), 15-33.  
43  
44  
45 France, CR., France, JL., Wissel, ME, Ditto, B., Dickert, T., & Himawan, LK.(2013). Donor  
46  
47 anxiety, needle pain, and syncopal reactions combine to determine retention: a path  
48  
49 analysis of two-year donor return data. *Transfusion, 53*, 1992-2000.  
50  
51 DOI: 10.1111/trf.12069  
52  
53 France, C. R., & France, J. L. (2018). Can survey responses to online motivational  
54  
55 interview questions enhance blood donation intention? *Transfusion, 58*, 244A-  
56  
57  
58 244A  
59  
60

- 1  
2  
3  
4 France, C. R., France, J. L., Carlson, B. W., Frye, V., Duffy, D., Kessler, D. A., ...  
5  
6 Shaz, B. H. (2017) Applying self-determination theory to the blood donation  
7  
8 context: The blood donor competence, autonomy, and relatedness enhancement  
9  
10 (Blood Donor CARE) trial. *Contemporary Clinical Trials*, 53, 44-51.  
11  
12  
13  
14 France, C. R., France, J. L., Carlson, B. W., Himawan, L. K., Kessler, D. A., Reboza,  
15  
16 M., ... Fox, K.R. (2017). A motivational interview promotes retention of blood  
17  
18 donors with high internal motivation *Transfusion*, 57, (10), 2433-2439.  
19  
20  
21  
22 France, C. R., France, J. L., Carlson, B. W., Himawan, L. K., Stephens, K. Y.,  
23  
24 Frame-Brown, T.A., ... Menitove, J.E. (2014). Fear of blood draws, vasovagal  
25  
26 reactions, and retention among high school donors. *Transfusion*, 54(3), 918-924.  
27  
28  
29  
30 France, C. R., France, J. L., Wissel, M. E., Ditto, B., Dickert, T., & Himawan, L. K.  
31  
32 (2013). Donor anxiety, needle pain, and syncopal reactions combine to  
33  
34 determine retention: a path analysis of two-year donor return data. *Transfusion*,  
35  
36 53(9), 1992-2000.  
37  
38  
39  
40 France, C. R., Kawalsky, J. M., France, J. L., Himawan, L. K., Kessler, D. A., &  
41  
42 Shaz, B. H. (2014). The blood donor identity survey: A multidimensional  
43  
44 measure of blood donor motivations. *Transfusion*, 54(8), 2098-2105  
45  
46  
47  
48 France, C. R., Rader, A., & Carlson, B. (2005). Donors who react may not come  
49  
50 back: Analysis of repeat donation as a function of phlebotomist ratings  
51  
52 of vasovagal reactions. *Transfusion and Apheresis Science*, 33(2), 99-106.  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Gemelli, C. N., Carver, A., Garn, A., Wright, S. T., & Davison, T. E. (2018).  
5  
6 Evaluation of the impact of a personalized postdonation short messaging service  
7  
8 on the retention of whole blood donors. *Transfusion*, *58*(3), 701-709.  
9  
10  
11 Gill, P., & Lowes, L. (2008). Gift exchange and organ donation: Donor and recipient  
12  
13 experiences of live related kidney transplantation. *International Journal of*  
14  
15 *Nursing Studies*, *45*(11), 1607-1617.  
16  
17  
18  
19 Godin, G., Amireault, S., Vézina-Im, L. A., Sheeran P, Conner, M., Germain,  
20  
21 M., Delage, G. (2013). Implementation intentions intervention among temporarily  
22  
23 deferred novice blood donors. *Transfusion*, *53*(8), 653-60.  
24  
25  
26  
27 Godin, G., Vézina-Im, L. A., Beélangier-Gravel, A., & Amireault, S. (2012). Efficacy of  
28  
29 interventions promoting blood donation: A systematic review. *Transfusion*  
30  
31 *Medicine Reviews*, *26*(3), 224-237.  
32  
33  
34  
35 Godin, G., Conner, M., Sheeran, P., Bélangier-Gravel, A., & Germain, M. (2007).  
36  
37 Determinants of repeated blood donation among new and experienced blood  
38  
39 donors. *Transfusion*, *47*(9), 1607-1615.  
40  
41  
42  
43 Godin G., Germain, M, Conner, M, Delage, G., Sheeran, P. (2015). Promoting the  
44  
45 return of lapsed blood donors: A seven-arm randomized controlled trial of the  
46  
47 question-behavior effect. *Health Psychology*, *33*(7), 646-655.  
48  
49  
50  
51 Godin, G., Sheeran, P., Conner, M., Germain, M., Blondeau D., Gagne, C., ...  
52  
53 Naccache, H. (2005). Factors explain the intention to give blood among the  
54  
55 general population. *Vox Sanguinis*, *89*(3), 140-149.  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American*  
5  
6 *Psychologist*, 48(1), 26–34.  
7  
8  
9 Golding, S. E., & Cropley, M. (2017). A systematic narrative review of effects of  
10  
11 community-based intervention on rates of organ donor registration. *Progress in*  
12  
13 *Transplantation*, 27(3), 295-308.  
14  
15  
16 Greinacher, A., Fendrich, K., Alpen, U., & Hoffman, W. (2007). Impact of  
17  
18 demographic changes on the blood supply: Meckenburg-West Pomerania as a  
19  
20 model region for Europe. *Transfusion*, 47(3), 395-401.  
21  
22  
23 Greinacher, A., & Fendrich, K. (2010). Demographic changes: The impact for safe  
24  
25 blood supply. *ISBT Science Series*, 5, 239-243.  
26  
27  
28 Greinacher, A., Fendrich, K., & Hoffman, W. (2010). Demographic changes: The  
29  
30 impact for safe blood supply. *Transfusion Medicine Hemotherapy*, 37(3), 141-  
31  
32  
33  
34  
35  
36  
37  
38  
39 Guerrero, N., Mendes de Leon, C. F., Evans, D. A., & Jacobs E. A. (2015).  
40  
41 Determinants of trust in health care in an older population. *Journal of American*  
42  
43 *Geriatrics Society*, 63(3), 553-557.  
44  
45  
46 Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer & H. H.  
47  
48 Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852-870). Oxford: Oxford  
49  
50 University Press.  
51  
52  
53 Harris, D. G., Quinn, K., Dahi, S., Burdorf, L., Azimzadeh, A. M., & Pierson, R. N., III.  
54  
55  
56 (2014). Lung xenotransplantation: Recent progress and current status.  
57  
58  
59 *Xenotransplantation*, 21(6), 496-506.  
60

- 1  
2  
3  
4 Henderson, A. J. Z., Landolt, M. A., McDonald, M. F., Barrable, W. M., Soos, J. G.,  
5  
6 Gourlay, W., ... Landsbery, D. N. (2003). The living anonymous kidney donor:  
7  
8 Lunatic or saint? *American Journal of Transplantation*, *3*(2), 203-213.  
9  
10  
11 Hill, E. M. (2016). Posthumous organ donation attitudes, intentions to donate, and  
12  
13 organ donor status: Examining the role of the big five personality dimensions and  
14  
15 altruism. *Personality and Individual Differences*, *88*, 182-186.  
16  
17  
18  
19 Holtzman, S., Clarke, H. A., McCluskey, S. A., Turcotte, K., Grant, D., & Katz, J.  
20  
21 (2014). Acute and chronic postsurgical pain after living liver donation: Incidence  
22  
23 and predictors. *Liver Transplantation*, *20*(11), 1336-1346.  
24  
25  
26  
27 Hryhorowicz, M., Zeyland, J., Slomski, R., & Lipinski, D. (2017). Genetically  
28  
29 modified pigs as organ donors for xenotransplantation. *Molecular Biotechnology*,  
30  
31 *59*(9), 435-444.  
32  
33  
34  
35  
36  
37  
38 Hyde, M. K., Knowles, S. R., & White, K. M. (2013). Donating blood and organs:  
39  
40 using an extended theory of planned behavior perspective to identify similarities  
41  
42 and differences in individual motivations to donate. *Health Education Research*,  
43  
44 *28*(6), 1092–1104.  
45  
46  
47  
48 James, R. C., & Matthews, D. E. (1993). The donation cycles: A framework for the  
49  
50 measurement and analysis of blood donor and return behaviour. *Vox Sangninis*,  
51  
52 *64*(1), 37-42.  
53  
54  
55  
56 Johnson, E. J., & Goldstein, D. G. (2003). Do defaults save  
57  
58 lives? *Science*, *302*(5649), 1338-1339.  
59  
60

- 1  
2  
3  
4 Kopfman, J. E., & Smith, S. W. (1996). Understanding the audiences of a health  
5  
6 communication campaign: A discriminant analysis of potential organ donors  
7  
8 based on intent to donate. *Journal of Applied Communication Research*, 24(1),  
9  
10 33-49.  
11  
12  
13  
14 Lacetera, N., Macis, M., & Slonim, R. (2013). Economic rewards to motivate blood  
15  
16 donation. *Science*, 340(6135), 927-928.  
17  
18  
19 Lacetera, N., Macis, M., & Slonim, R. (2014). Rewarding volunteers: A field  
20  
21 experiment. *Management Science*, 60(5), 1107-1129.  
22  
23  
24 Landry, D. W. (2006). Voluntary reciprocal altruism: A novel strategy to encourage  
25  
26 deceased organ donation. *Kidney International*, 69(6), 957-959.  
27  
28  
29 Lennerling, A., Forsberg, A., & Nyberg, G. (2003). Becoming a living donor.  
30  
31 *Transplantation*, 76(8), 1243-1247.  
32  
33  
34  
35 Loewenstein, G. (2005). Hot-cold empathy gaps on medical decision making. *Health*  
36  
37 *Psychology*, 24(4S), S49-S56.  
38  
39  
40 Lucky, T. T. A, Seed, C. R., Keller, A., Lee, J., McDonald, A., Ismay, S., ... Wilson,  
41  
42 D.P. (2013). Trends in transfusion-transmissible infections among Australian  
43  
44 blood donors from 2005 to 2010. *Transfusion*, 53(11), 2751-2762.  
45  
46  
47  
48 Lwin, M. O., Williams, J. D., & Lan, L. L. (2002). Social marketing initiatives: National  
49  
50 kidney foundation's organ donation programs in Singapore. *Journal of Public*  
51  
52 *Policy & Marketing*, 21(1), 66-77.  
53  
54  
55  
56 Ma, L., Tunney, R., & Ferguson, E. (2017). Does gratitude enhance prosociality: A  
57  
58 meta-analytic review. *Psychological Bulletin*, 143(6), 601-635.  
59  
60

- 1  
2  
3  
4 MacKay, D., & Robinson, A. (2016). The ethics of organ donator registration policies:  
5  
6 Nudges and respect for autonomy. *American Journal of Bioethics*, 16(11), 3-12.  
7  
8  
9 Maple, H., Chilcot, J., Burnapp, L., Gibbs, P., Santhouse, A., Norton, S., ... Mamode,  
10  
11 N. (2014). Motivation, outcomes and characteristics of unspecified (nondirected  
12  
13 altruistic) kidney donors in the United Kingdom. *Transplantation*, 98(11), 1182-  
14  
15  
16  
17 1189.  
18  
19  
20 Martin, K. D., Roter, D. L., Beach, M. C., Carson, K. A., & Cooper, L. A. (2013).  
21  
22 Physician communication behaviour and trust among black and white patients  
23  
24 with hypertension. *Medical Care*, 51(2), 151-157.  
25  
26  
27  
28 Masser, B. M., France C. R., Himawan, L. K., Hyde, M. K., & Smith, G. (*in press*).  
29  
30 The impact of the context and recruitment materials on nondonors' willingness to  
31  
32 donate blood. *Transfusion*. doi: 10.1111/trf.13805  
33  
34  
35  
36 Masser, B. M., White, K. M., Hyde, M. K., Terry, D. J., & Robinson, N. G. (2009).  
37  
38 Predicting blood donation intentions and behavior among Australian blood  
39  
40 donors: Testing an extended Theory of Planned Behavior model. *Transfusion*,  
41  
42  
43 49(2), 320-329.  
44  
45  
46  
47 Matesanz, R., Gil, B. D., Coll, E., Mahillo, B., & Marazuela, R. (2017). How Spain  
48  
49 reached 40 deceased organ donors per million population. *American Journal of*  
50  
51 *Transplantation*, 17(6), 1447-1454.  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000

- 1  
2  
3  
4 McCartney, M. (2017). When organ donation isn't a donation. *British Medical*  
5  
6 *Journal*, 356, 1028.  
7  
8  
9 Meade, M. A., France, C. R., & Peterson, L. M. (1996). Predicting vasovagal  
10  
11 reactions in volunteer blood donors. *Journal of Psychosomatic Research*, 40(5),  
12  
13 495-501.  
14  
15  
16 Mellstrom, C., & Johannesson, M. (2008). Crowding out in blood donation: Was  
17  
18 Titmuss right? *Journal of European Economic Association*, 6(4), 845-863.  
19  
20  
21  
22 Miller, J., Currie, S. & O'Carroll, R. E. (2018). 'What if I'm not dead?': Myth-busting  
23  
24 and organ donation. *British Journal of Health Psychology*, (in press).  
25  
26  
27 Moorlock, G., Ives, J., & Draper, H. (2014). Altruism in organ donation: An  
28  
29 unnecessary requirement? *Journal of Medical Ethics*, 40(2), 134–138.  
30  
31  
32  
33 Morgan, S. E., Miller, J., & Arasaratnam, L. A. (2002). Signing cards, saving lives: An  
34  
35 evaluation of the worksite organ donation promotion project. *Communication*  
36  
37 *Monographs*, 69(3), 253-273.  
38  
39  
40  
41 Morgan, S. E., Stephenson, M. T., Harrison, T. R., Afifi, W. A., & Long, S. D. (2008).  
42  
43 Facts versus 'feelings': How rational is the decision to become an organ donor?  
44  
45 *Journal of Health Psychology*, 13(5), 644–658.  
46  
47  
48  
49 Moseley, A., & Stoker, G. (2015). Putting public policy defaults to the test: The case  
50  
51 of organ donor registration. *International Public Management Journal*, 18(2),  
52  
53 246-264.  
54  
55  
56  
57 Myhal, G., Godin, G., & Dubuc, S. (2017). The relative efficacy of three interventions  
58  
59 to favour return to give blood. *Blood Transfusion*, 15(5), 398-404.  
60



1  
2  
3  
4 Nagal, T. (1970). *The possibility of altruism*. London, UK: Oxford University Press..

5  
6  
7 National Health Service Blood and Transplant [NHSBT]. *Blood 2020: A strategy for*

8  
9 *the blood supply in England and North Wales*. Retrieved from:

10  
11  
12 [https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/1652/blood-](https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/1652/blood-2020.pdf)  
13  
14  
15 2020.pdf

16  
17 National Health Service Blood and Transplant [NHSBT]. (2012-2013). *Annual*

18  
19 *Review 2012-13: Saving and improving lives*. Retrieved from:

20  
21  
22 [https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-](https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/1881/nhsbt_annual_review_2012-13.pdf)  
23  
24  
25 corp/1881/nhsbt\_annual\_review\_2012-13.pdf

26  
27 National Health Service Blood and Transplant [NHSBT]. (2016). Retrieved from:

28  
29  
30 <https://www.organdonation.nhs.uk/>

31  
32  
33 National Health Service Blood and Transplant [NHSBT]. (2017). *ODT performance*

34  
35 *report: September 2017*. Retrieved from:

36  
37  
38 [https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/5074/odt-smt-](https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/5074/odt-smt-monthly-performance-report-201709-website-version.pdf)  
39  
40  
41 monthly-performance-report-201709-website-version.pdf

42  
43 National Health Service Blood and Transplant [NHSBT]. (2017-2018). *Organ*

44  
45 *donation and transplantation: Activity report 2017/2018*. Retrieved from:

46  
47  
48 [https://nhsbt.dbe.blob.core.windows.net/umbraco-assets/1848/transplant-activity-](https://nhsbt.dbe.blob.core.windows.net/umbraco-assets/1848/transplant-activity-report-2017-2018.pdf)  
49  
50  
51 report-2017-2018.pdf

52  
53 Neuberger, J., Trotter, P., & Stratton, R. (2017). Organ transplantation rates in the

54  
55  
56 UK, *British Medical Journal*, 359, j5218.

- 1  
2  
3  
4 Newman, B. H., Tommolino, E., Andreozzi, C., Joychan, S., Pocedic, J., &  
5  
6 Herringhausen, J. (2006). The effect of a 16-oz. water drink on blood donor  
7  
8 reaction rates in high-school students: Two independent studies combined.  
9  
10  
11 *Transfusion*, 46, S80A.
- 12  
13  
14 Nijkamp, M. D., Hollestelle, M. L., Zeegers, M. P., van den Borne, B., & Reubsaet, A.  
15  
16 (2008). To be(come) or not to be(come) an organ donor, that's the question: A  
17  
18 meta-analysis of determinant and intervention studies, *Health Psychology*  
19  
20  
21 *Review*, 2(1), 20-40.
- 22  
23  
24  
25 Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science*, 314(5805),  
26  
27 1560-1563.
- 28  
29  
30 O'Carroll, R. E., Dryden, J., Hamilton-Barclay, T., & Ferguson, E. (2011a).  
31  
32 Anticipated regret and organ donor registration--a pilot study. *Health Psychology*,  
33  
34 30(5), 661-664.
- 35  
36  
37  
38 O'Carroll, R. E., Foster, C., McGeechan, G., Sandford, K., & Ferguson, E. (2011b).  
39  
40 The "ick" factor, anticipated regret, and willingness to become an organ donor.  
41  
42 *Health Psychology*, 30(2), 236-245.
- 43  
44  
45  
46 O'Carroll, R. E., Haddow, L., Foley, L., & Quigley, J. (2017). If you needed an organ  
47  
48 transplant would you have one? The effect of reciprocity priming and mode of  
49  
50 delivery on organ donor registration intentions and behaviour. *British Journal of*  
51  
52 *Health Psychology*, 22(3), 577-588.
- 53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3  
4 O'Carroll, R. E, Shepherd, L., Hayes, P. C., & Ferguson, E. (2016). Anticipated  
5  
6 regret and organ donor registration: A randomised controlled trial. *Health*  
7  
8  
9 *Psychology, 35*(11), 1169-1177.  
10  
11  
12 O'Carroll, R. E., Quigley, J., & Miller, C. B. (2018). The effect of reciprocity priming  
13  
14 on organ donor registration intentions and behavior. *Annals of Behavioral*  
15  
16 *Medicine, 23*, R827.  
17  
18  
19 Omoto, A. M., & Snyder, M. (1995). Sustained helping without obligation: Motivation,  
20  
21 longevity of service, and perceived attitude change among AIDS volunteers.  
22  
23 *Journal of Personality and Social Psychology, 68*(4), 671-686.  
24  
25  
26  
27 Ost, L. G., & Sterner, U. (1987). Applied tension. A specific behavioral method for  
28  
29 treatment of blood phobia. *Behaviour Research and Therapy, 25*(1), 25-29.  
30  
31  
32  
33 Paolo, G. (2013). *Quando uno vale due: Psocologia della donazione di sangue* (pp.  
34  
35 1-88). Milan, Italy: Editrice La Scuola.  
36  
37  
38 Paolo , G., Alfieri, S., Marta, E., & Saturni, V. (2015). New donors, loyal donors, and  
39  
40 regular donors: Which motivations sustain blood donation? *Transfusion and*  
41  
42 *Apheresis Science, 52*(3), 339-344.  
43  
44  
45  
46 Pedder-Jones, C., Papadopoulos, C., & Randhawa, G. (2017). Primary care  
47  
48 interventions to encourage organ donation registration: A systematic review.  
49  
50 *Transplantation Reviews, 31*(4), 268-275.  
51  
52  
53  
54 Piliavin, J. A., & Callero, P. L. (1991). *The Johns Hopkins series in contemporary*  
55  
56 *medicine and public health. Giving blood: The development of an altruistic*  
57  
58 *identity*. Baltimore, MD, US: Johns Hopkins University Press.  
59  
60

1  
2  
3  
4 Prochaska, J. O. & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a  
5  
6 more integrative model of change. *Psychotherapy: Theory, Research and*  
7  
8  
9 *Practise, 19*(3), 276-288.

10  
11 Prochaska, J. O., DiClemente, C. C. & Norcross, J. C. (1992). In search of how  
12  
13 people change: Applications to addictive behaviors. *American Psychologist,*  
14  
15  
16  
17 *47*(9), 1102-1114.

18  
19 Quick, B. L., Anker, A. E., Feeley, T. H., & Morgan, S. E. (2016). An examination of  
20  
21 three theoretical models to explain the organ donation attitude–registration  
22  
23 discrepancy among mature adults. *Health Communication, 31*(3) 265-274.

24  
25 Reinders, M. E. J., van Kooten, C., Rabelink, T. J., & de Fijter, J. W. (2018).  
26  
27 Mesenchymal stromal cell therapy for solid organ transplantation.  
28  
29  
30  
31  
32 *Transplantation, 102*(1), 35-43.

33  
34 Renner, S., Lindenmeier, J., Tscheulin, D. K., & Drevs, F. (2013). Guilt appeals and  
35  
36 prosocial behaviour: An experimental analysis of the effects of anticipatory  
37  
38 versus reactive guilt appeals on the effectiveness of blood donor appeals.  
39  
40  
41  
42  
43 *Journal of Nonprofit and Public Sector Marketing, 25*(3), 237-255.

44  
45 Rithalia, A., Myers, L., & Sowden, A. (2009). Impact of presumed consent for organ  
46  
47 donation on donation rates: A systemic review. *British Medical Journal Open,*  
48  
49  
50  
51  
52 *338*, a3162.

53 Robbins, M.L., Paiva, A.L., Amoyal, N. R., = Brick, L., Kessler, D. A., Burditt, C.,  
54  
55 Caltabiano, M., & Shaz, B. H. (2015) Acceptability and Feasibility of Culturally  
56  
57 Tailored Internet-Delivered Intervention to Promote Blood donation in Blacks. *Health*  
58  
59  
60 *Promotion Practice, 16*, (2) 227-235

- 1  
2  
3  
4 Rodrigue, J. R., Cornell, D. L., & Howard, R. J. (2008). The instability of organ  
5  
6 donation decisions by next-of-kin and factors that predict it. *American Journal of*  
7  
8 *Transplant*, *8*(12), 2661-2667.  
9  
10  
11 Roff, S. R. (2007). Self-interest, self-abnegation and self-esteem: Towards a new  
12  
13 moral economy of non-directed kidney donation. *Journal of Medical Ethics*,  
14  
15 *33*(8), 437-441.  
16  
17  
18 Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of  
19  
20 intrinsic motivation, social development, and well-being. *American Psychologist*,  
21  
22 *55*(1), 68-78.  
23  
24  
25 Saito, K. (2015). Impure altruism and impure selfishness. *Journal of Economic*  
26  
27 *Theory*, *158*(Part A), 336-370.  
28  
29  
30 Sallis, A., Harper, H., & Sanders, M. (2018). Effect of persuasive messages on  
31  
32 national health service organ donor registrations: A pragmatic quasi-randomised  
33  
34 controlled trial with one million UK road taxpayers. *Trials*, *19*(1), 513.  
35  
36  
37 Salonen, J. T., Tuomainen, T. P., Salonen, R., Lakka, T. A., & Nyysönen, K. (1998).  
38  
39 Donation of blood is associated with reduced risk of myocardial infarction. The  
40  
41 Kuopio Ischaemic Heart Disease Risk Factor Study. *American Journal of*  
42  
43 *Epidemiology*, *148*(5), 445-451.  
44  
45  
46  
47  
48  
49  
50  
51 Sass, R. G. (2012). Toward a more stable blood supply: Charitable incentives,  
52  
53 donation rates and the experience of September 11. *The American Journal of*  
54  
55 *Bioethics*, *13*(6), 38-45.  
56  
57  
58  
59  
60

Schreiber, G. B., Sharma, U. K., Wright, D. J., Glynn, S. A., Ownby, H. E., Tu, Y., ...

Gitcher R. Retrovirus Epidemiology Donor Study. (2005). First-year donation patterns predict long-term commitment for first time donors. *Vox Sanguinis*, *88*(2), 114-121.

Scott, E. M., Greenwood, J. P., Gilbey, S. G., Stoker, J. B., & Mary, D.A. (2001).

Water ingestion increases sympathetic vasoconstrictor discharge in normal human subjects. *Clinical Science*, *100*(3), 335-342.

Sharp, C., & Randhawa, G. (2014). Altruism, a gift giving and reciprocity in organ

donation: A review of cultural perspectives and challenges of the concepts.

*Transplantation Review*, *28*(4), 163-168.

Shaz, B. H., Zimring, J. C., Demmons, D. G., & Hillyer, C. D. (2008). Blood Donation

and blood Transfusion: Special Considerations for African Americans.

*Transfusion Medicine Review*, *22*(3), 202-214.

Sheeran, P., Godin, G., Conner, M., & Germain, M. (2017). Paradoxical effects of

experience: Past behavior both strengthens and weakens the intention-behavior relationship. *Journal of the Association for Consumer Research*, *2*, 309-318.

Shepherd, L., O'Carroll R. E., & Ferguson, E. (2014). An international comparison of

deceased and living organ donation rates in opt-in and opt-out systems: A panel study. *BMC Medicine*, *12*(1), 131-145.

Siegel, J. T., Alvaro, E. M., Crano, W. D., Gonzalez, A. V., Tang, J. C., & Jones, S.

P. (2010). Passive-positive organ donor registration behavior: A mixed method assessment of the IIFF Model. *Psychology, Health and Medicine*, *15*(2), 198–209.

- 1  
2  
3  
4 Smith, K. D., Keating, J. P., & Stotland, E. (1989). Altruism reconsidered: The effects  
5  
6 of denying feedback on a victim's status to empathically witness. *Journal of*  
7  
8 *Personality and Social Psychology*, 57(4), 641-650  
9  
10  
11 Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of*  
12  
13 *unselfish behavior*. Cambridge: Harvard University Press.  
14  
15  
16  
17 Steele, W. R., Schreiber, G. B., Guiltinan, A., Nass, C., Glynn, S. A., Wright, D. J.,  
18  
19 ... Garratty, G. Retrovirus Epidemiology Donor Study. (2008). The role of  
20  
21 altruistic behavior, empathic concern, and social responsibility motivation in  
22  
23 blood donor behaviour. *Transfusion*, 48(1), 43-54.  
24  
25  
26  
27 Steinberg, D. (2010). Altruism in medicine: Its definition, nature and dilemmas.  
28  
29 *Cambridge Quarterly of Healthcare Ethics*, 19(2), 249-257.  
30  
31  
32  
33 Sykes, M., & Sachs, D. H. (2001). Mixed chimerism. *Philosophical transactions of*  
34  
35 *the Royal Society of London Series B-Biological Sciences*. 356(1409), 707-726.  
36  
37  
38 Thaler, R. H. & Sunstein, C. R. (2009) *Nudge: Improving decisions about health,*  
39  
40 *wealth, and happiness*. Yale University Press, New Haven: CT.  
41  
42  
43 Thijsen, A., Gemelli, CN., Davison, TE., O'Donovan, J., Bell, B., & Masser, Barbara  
44 (2018) Does using applied muscle tension at strategic time points during donation reduce  
45 phlebotomist- and donor-reported vasovagal reaction rates? A three-armed randomized  
46 controlled trial. *Transfusion*, 58, 2352-2359. DOI: 10.1111/trf.14940  
47  
48  
49  
50 Titmuss, R. M. (1970). *The gift relationship: From human blood to social policy*.  
51  
52  
53 Tracy, J. L., & Robins, R. W. (2007). The psychological structure of pride: A tale of  
54  
55 two facets. *Journal of Personality and Social Psychology*, 92(3), 506-525.  
56  
57  
58  
59  
60

- 1  
2  
3  
4 Trafimow, D., & Sheeran, P. (1998). Some test of the distinction between cognitive  
5  
6 and affective beliefs. *Journal of Experimental Social Psychology*, *34*(4), 378-397.  
7  
8
- 9 Tran, N. Y. L., Charbonneau, J., & Valderrama-Benitez, V. (2013). Blood donation  
10  
11 practices, motivations and beliefs in Montreal's block communities; The modern  
12  
13 gift under a new light. *Ethnicity and Health*, *18*(6), 508-529.  
14  
15
- 16 Ugur, Z. B. (2015). Does presumed consent save lives? Evidence from  
17  
18 Europe. *Health Economics*, *24*(12), 1560-1572.  
19  
20
- 21 Ullum, H., Rostgaard, K., Kamper-Jørgensen, M., Reilly, M., Melbye, M., Nyrén O.,  
22  
23 ... Hjalgrim, H. (2015). Blood donation and blood donor mortality after  
24  
25 adjustment for a healthy donor effect. *Transfusion*, *55*(10), 2479-2485.  
26  
27
- 28 van Dongen, A. (2015). Easy come, easy go. Retention of blood donors. *Transfusion*  
29  
30 *Medicine*, *25*, 227-233. DOI: 10.1111/tme.12249  
31  
32
- 33 van Dongen, A., Mews, M., de Kort, W. L. A. M., & Wagenmans, E. (2016). Missing  
34  
35 minorities: A survey based description of the current state of minority blood  
36  
37 donor recruitment across 23 countries. *Diversity and Equality in Health and*  
38  
39 *Care*, *13*(1), 138-145.  
40  
41  
42
- 43 Vahidnia, F., Hirschlr, N.V., Agapova, M., Chinn, A., Busch, M. P. & Custer, B.  
44  
45 (2013). Cancer incidence and mortality in a cohort of US blood donors: A 20-  
46  
47 year study. *Journal of Cancer Epidemiology*, Article ID 814842.  
48  
49
- 50 van Dalen, H. P., & Henkens, K. (2014). Comparing the effects if defaults in organ  
51  
52 donation systems. *Social Science and Medicine*, *106*, 137-142.  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3  
4 Viar, M. A., Etzel, E. N., Ciesielski, B. G., & Olatunji, B. O. (2010). Disgust, anxiety,  
5  
6 and vasovagal syncope sensations: A comparison of injection-fearful and  
7  
8 nonfearful blood donors. *Journal of Anxiety Disorders*, 24(8), 941-945.

9  
10  
11 Vincent, A., & Logan, L. (2012). Consent for organ donation. *British Journal of*  
12  
13 *Anaesthesia*, 108(1), i80-i87.

14  
15  
16 Weiner, B. (1985). An attributional theory of achievement motivation and emotion.  
17  
18  
19 *Psychological Review*, 92(4), 548 –573.

20  
21  
22 Wellesley, H (2011). A nudge in the right direction for organ donation-but is it  
23  
24  
25 enough? *British Medical Journal*, 343, d5726.

26  
27  
28 Wevers, A., Wigboldus, D. H., van den Hurk, K., van Baaren, R., Veldhuizen, I. J.  
29  
30 (2015). Increasing first-time blood donation of newly registered donors using  
31  
32 implementation intentions and explicit commitment techniques. *Vox Sanguinis*,  
33  
34  
35 108(1), 18-26.

36  
37  
38 White, K. M., Poulsen, B. E., & Hyde, M. K. (2017). Identity sand personality  
39  
40  
41 influences on donating money, time and blood. *Nonprofit and Voluntary Sector*  
42  
43 *Quarterly*, 46, 371-394.

44  
45  
46 Willis, B. H., & Quigley, M. (2014). Opt-out organ donation: On evidence and public  
47  
48  
49 policy. *Journal of the Royal Society of Medicine*, 107(2), 56-60.

50  
51  
52 Yamada, K., Sykes, M., & Sachs, D. (2017). Tolerance in xenotransplantation.  
53  
54  
55 *Current Opinion in Organ Transplantation*, 22(6), 522-528.

1  
2  
3  
4 Zou, S., Stramer, S. L., & Dodd, R. Y. (2012). Donor testing and risk: Current  
5  
6 prevalence, incidence, and residual risk of transfusion-transmissible agents in  
7  
8 US allogenic donations. *Transfusion Medicine Reviews*, 26(2), 119-128.  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Table 1.** Behavioural characteristics of Blood and Organ Donation

	Whole Blood Donation	Organ Donation		
		Posthumou s	Living- familial (directed)	Living – stranger (non- directive/altruistic)
Voluntary	√	√	√	√
Anonymous	√	√		√
Single Act	√	√	√	√
Repeat Act	√	√		√
Costly: Self	√		√	√
Costless: Self		√		
Benefit: Stranger	√	√		√
Benefit: Relative			√	
Genetic Similarity	√	√	√	√
Phenotypic Similarity		√	√	√
Feedback	√		√	
Free-riding	√	√		
Obligation felt by recipient			√	
Surrogate Decisions		√		

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Table 2.** Links Between Volunteer Function, Self-Determination Theory-motivations and Mechanisms of Altruism (see also Ferguson & Lawrence 2015)

Volunteer Functions	Definition	Self-Determination Theory (SDT) Motivations	Link to MOA
<i>Values</i>	Volunteers can express values of altruism/humanitarianism	Extrinsic: Identified regulation	Pure Altruism
<i>Understanding</i>	Volunteer can learn new skills that they would not normally have the chance to exercise		Self-Interest
<i>Social</i>	Volunteer in activities that important others view favourably and strengthen social bonds		Reputation Building & Gratitude
<i>Career</i>	Volunteering enhances career related goals	Extrinsic: external regulation	Self-Interest
<i>Protective</i>	Volunteering is ego protecting by reducing feelings of guilt from being better off	Extrinsic: Introjected regulation	Inequality Aversion
<i>Enhancement</i>	Volunteers grow personally and emotionally	Intrinsic regulation	Warm-Glow

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

**Table 3. Advantages and Disadvantages of an opt-out deceased organ donor registration system.**

	<i>Evidence</i>	<i>Reference</i>
<b>Advantages</b>		
Under opt-out more organs for transplantation are available	Epidemiological evidence that countries with opt-out defaults, on average, to have higher transplantation rates than opt-in countries	Bilgel, 2012; Johnson & Goldstein, 2003; Rithalia, Myers & Snowden, 2009; Ugur, 2015; Shepherd, O’Carroll & Ferguson, 2014
Power of defaults	The default option is on average selected by the majority	Thaler & Sunstein, 2009
Positive public attitude	Members of the general public are positively disposed to an opt-out system	
<b>Disadvantages</b>		
High donation variance: The range of donation/transplantation rate varies widely by opt-out and opt-in countries	For example, Sweden, Luxembourg and Bulgaria have opt-out default since 1996 yet remain lowly-ranked countries for organ donation within Europe, and lower than many opt-in countries such as England	Shepherd, O’Carroll & Ferguson, 2014
Negative impact on living donations	Under opt-out default the number of living donations goes down. This is especially the case for non-directed living donations	Fernandez, Howard & Krose, 2013; Shepherd, O’Carroll & Ferguson, 2014
Individual presumed content is not interpretable	<i>Passively</i> not opting-out (deemed consent) does not provide any information about a person’s true preferences to be a posthumous organ donor. People may not opt-out because; they want to be a donor, they forgot to, inertia, or lack of effort. Thus, there may be people who do not want to be a donor who are on the register by ‘default’. This lack of certainty is problematic	Beshears, Choi, Laibson & Madrian, 2008

1  
2  
3  
4 when it comes to asking for relatives' consent and this group will  
5 reflect a large percentage of donors registered under an opt-out  
6 system  
7

8 Moral concerns

9 There are public concerns around medical mistrust and  
10 reactance to State "ownership" of organs and lack of personal  
11 autonomy  
12

Csillag, 1998 ; MacKay & Robinson, 2016

13 'Lone wolf effects' – a reciprocal  
14 effect where by people follow the  
15 lead of a person opting-out and  
16 follow suit and this is a stronger  
17 effect than following the lead of  
18 someone opting in ('A good  
19 Shepherd Effect')

20 In the world of social media there is evidence that updating  
21 Facebook status about being an organ donor greatly enhances  
22 registration under an opt-in system. Game theoretic analyses  
23 and data shows that an opposite and more powerful 'lone wolf  
24 effect' emerges under opt-out. Here when people share  
25 information that they have decided to opt-out, it acts as a strong  
26 social force resulting in others rapidly following suit

Ferguson, Shichman & Tan, 2018

27 Causal Status

28 The cross-sectional nature of the epidemiological evidence  
29 means that it is not possible to infer any real causal role to a  
30 change to opt-out. While Shepherd et al. (2014) used  
31 instrumental variable to infer a causal role of an opt-out system,  
32 this does not allow for an estimate the direct causal role the  
33 dynamic change from opt-in to opt-out and visa-versa.

34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000