ORIGINAL RESEARCH

# TRANSFUSION

# The power of arts-based film interventions to encourage Black blood donors

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## Abstract

**Background:** Blood services must consider innovative ways to encourage more Black people to donate to enhance the efficacy of treatments. We evaluate how two innovative arts-based approaches (co-designed and locally produced films and a large-scale Marvel Studios'/NHSBT collaboration) can achieve this by generalizing to a wider audience from their target audiences.

**Study Design and Methods:** Four co-designed short community films were produced in the United Kingdom: Comedy, Reciprocity, Donor-Recipient, and Sliding Doors. In Study 1 ($N = 44$: Black people), these films were evaluated in the target community in which they were produced. In Study 2 ($N = 1237$: Black $= 638$, White $= 599$), the community and Marvel Black Panther/NHSBT films were evaluated in a nontarget general population sample. Evaluations were in terms of campaign behavioral efficacy (e.g., willingness to donate,

encourage others to donate) and affect. These analyses were segmented by donor status, age, and gender.

**Results:** Study 1 shows that the community groups rated the films very positively, with over 90% stating that they would be convinced to donate blood. Study 2 shows the results from the community films generalized to the general population, with the Black Panther film also rated positively in the general population. Three community films and the Black Panther film were rated equally positively. There were notable differences across generations and by donor status.

**Discussion:** The results highlight the power of arts-based approaches (both locally co-produced community films and franchise collaborations) in encouraging donors within their target audiences and, importantly, on the broader population.

**KEYWORDS**

Donors | Co-Design | Art-Based | Film Campaigns

## 1 | INTRODUCTION

There is an urgent clinical need to encourage more Black people to donate blood to enhance the efficacy of treatment for conditions like sickle cell disease.[1–3] For example, the National Health Services Blood and Transplant (NHSBT) requires 12,000 new Black donors in 2024, a 50% increase from the previous year.[4] While traditional public health campaigns based on information transfer can be useful, novel arts-based approaches offer a promising alternative, leveraging emotional engagement by involving individuals in both the creation and consumption of art.[5] Further, arts-based approaches align with the latest public health approaches, emphasizing cultural change and community engagement through co-creation.[5] Despite the recognized potential of art-based interventions, their application and effectiveness for blood donation remain unexplored.[5–14] We explore two potential arts approaches in the context of blood donation.[5–14]

The first are community-based co-designed films aimed to enhance recruitment over a longer timescale for specifically targeted communities. Central to this strategy is the principle of co-design, a collaborative process where communities actively contribute to solving issues relevant to them by taking a leading role in the co-creation of materials.[15,16] This fosters active engagement and joint problem-solving based on authenticity, relatability, and nuanced understanding of cultural dynamics.[5,6] It also aligns with a global governmental push advocating greater amplification of ethnic minority voices within the development of healthcare initiatives.[17–20]

The second involves developing films that reflect a specific zeitgeist/phenomenon and targeting those interested. For example, NHSBT has developed a series of media campaigns with Marvel Disney. The most recent is based on *Black Panther*: *Wakanda Forever*. This has been successful, with results showing that the campaign "... motivated a record 884 people to donate on its first day",[21] with the following week seeing "...a 700% increase in registrations from people with Black/African-Caribbean heritage".[22]

A key feature of these two approaches is that they are targeted at a specific audience. For co-design, it is the community involved in the co-design. For the franchise, fans are targeted. In terms of evaluation, a key question is the extent to which the impact and success of these approaches generalize to nontarget groups. From a public health perspective, it is always possible that there are negative unforeseen consequences when an initiative designed for one group is seen by another group.

This study seeks to evaluate the added value or hidden consequences of these two arts-based approaches in nontarget audiences in the United Kingdom.[5,6] We explore how community-based co-designed short films are perceived both in the community in which they were developed and in the wider UK population. Second, we explore how the NHSBT/Marvel Studios' *Black Panther*: *Wakanda Forever* collaboration is perceived in a general UK population and, in so doing, examine the relative merits of community co-design and franchise-based approaches.[21,22]

## 2 | MATERIALS AND METHODS

### 2.1 | Co-design process and study design

Our co-design partners were Action on Blood, a UK and Nigeria-based social enterprise that recruits, nurtures, mobilizes, and showcases Black people participating in activities like blood donation and health research. The community-based films were co-developed following the guidelines established by Trischler et al.[15] and Telenta et al.[16] Through this process, Black professional artists and community members created script and song ideas during two days of workshops in London, UK ($N = 12$), which were later evaluated through an online survey ($N = 826$).[23] The ideas were then synthesized into four film scripts. Following this process, Action on Blood worked with the Black professional actors and community members who would feature in the films, to clarify narrative arcs, finalize scene sequences and blocking (actor movements), and ensure phrasing was naturalistic and conveyed the correct messaging. Action on Blood shot the films in various locations across London (Supplementary File Figure S1). The following video clips detail the process: (i) what is co-design, (ii) what was the project and why needed, (iii) what are next steps. This resulted in four co-designed community short films, which are detailed in Table 1 with links to the films.

### 2.2 | Design

Two experiments were conducted. The first was a *one-way within-subject* design at four levels, where all four community films were evaluated in the community that produced them (Study 1). The second was a *one-way between-subject* design in the general UK population, where participants were allocated to either the Black Panther/NHSBT collaboration or one of the four co-designed films (Study 2).

### 2.3 | Sampling

The community sample participants ($N = 44$) were recruited from London-based Black churches and community groups led by and for Black people and through a combination of poster invitations to participate, WhatsApp messages sent by group leaders, and in-person presentations at church services and group meetings. Whether they would do so at an in-person event or alone, at their own convenience, all participants accessed the survey through the same digital survey link during March 2023 (for more detail, see Supplementary File S3).

The general population participants ($N = 1237$) were sampled via Prolific (link), balanced across sex (Male, Female) and ethnicity (Black African/Caribbean/American/British and White/Caucasian) and restricted to the

**TABLE 1** Film synopsis.

| | Film | Length in seconds | Description | Link |
|---|---|---|---|---|
| Marvel collaboration | Black Panther: Wakanda Forever | 30 | Showcases a mix between *Black Panther: Wakanda Forever* cast members and NHSBT recipients, donors and staff, with the core message being: "Not family, but blood" | Black Panther |
| Community-based collaborations | Comedy | 82 | Portrays a relationship between a father and daughter. The daughter convinces the father to go and donate blood. The father becomes nervous but overcomes this and ends up having a great time. | Comedy |
| | Reciprocity | 143 | We see a Sunday school classroom of children, learning about "Loving thy neighbor". As one of the children takes over to give a more animated lesson — with child-friendly examples provided by his classmates — the teacher makes the connection between "loving thy neighbor" and the act of blood donation. | Reciprocity |
| | Donor-recipient | 99 | Two women are chatting on their mobile phones about someone they went to school with. The scene then cuts out to one of the women donating blood and the other receiving blood. | donor-recipient |
| | Sliding doors | 111 | This film unfolds in two parallel universes where in one account of a woman involved in a tragic accident, a man does not give blood, but in the other account, he does, with a better outcome for the woman. The story is told by a pastor to a church congregation, where both the woman and man are members. | sliding doors |

United Kingdom. Black people ($N = 638$) self-identified as African, Black/African American, Caribbean, and Black/British, and White people ($N = 599$) as White/Caucasian. While this research focuses on encouraging more Black donors, the White sample was also collected as they represent the majority demographic in the UK blood donor base.[24] For the purposes of the population analysis, age is split into three categories: (i) Gen Z (ages 18 to 26), (ii) Millennials (age 17 to 42), and (iii) Gen X + Boomers (>42). Participants were paid at £9 ($\sim$\$11) p/h (£0.75 ($\sim$\$1) for 5 minutes of work (payment information).

While there was a balanced representation of ethnicity, sex, age, and donor status across the five films in Study 2 (Supplementary File Table S6, Panel A), the Black sample was slightly younger ($p < 0.01$) with a lower likelihood of having donated blood previously ($p < 0.01$). The latter is a common finding in the literature (see Supplementary File Table S6, Panel B).

## 2.4 | Measures

The following measures were used across both studies unless otherwise stated:

Previous donor history: "*Have you ever donated blood? (Yes/No)*". This question is a validated measure of donation history.[25–28] The community sample responded using Yes (=2), Unsure (=1), and No (=0), recoded to Yes (=1) and Unsure/No (=0).

### 2.4.1 | Campaign behavioral efficacy

*Approach, avoid and encourage*

Ferguson et al.[29] have shown it is important to distinguish between donation decisions that are focused on actively considering approaching donating (willingness) and actively avoiding donation (being put off donation), as not being willing to donate is not the same as actively deciding not to. Ferguson et al.[29] also show that it is crucial to consider the person's wider social decision-making in terms of willingness to encourage others to donate. This is important as someone may wish not to donate but would still be happy to encourage others to donate. As such, we used the following validated measures: (i) *Approach* ("*Having seen the campaign video today, would you donate blood?*"), (ii) *Avoidance* ("*Having seen the campaign video today, would it put you off ever donating blood?*"), and (iii) *Encouraging others* ("*Having seen the campaign video today, would you encourage others to donate blood (e.g., share the campaign with others)?*"). These questions were binary responses, that is, Yes (=1) and No (=0). The community sample responded using Yes (=2), Maybe (=1), and No (=0), recoded to Yes/Maybe (=1) and No (=0).

*Emoji affective response*

As affect is the key mechanism believed to be engendered through arts-based approaches, we assessed affective responses to the campaign using five emoji faces from frowning to very happy: 'Awful' (=1), 'Not very happy' (=2), 'Okay' (=3), 'Really good' (=4), and 'Fantastic' (=5)[30] (see Supplementary File S4 for instructions). This method is widely validated as an index of affect, offering ecological and cross-cultural validity.[31–37]

## 2.5 | Statistical analysis and power calculations

Quantitative analyses were conducted in Stata-18. All tests are two-tailed. Statistical significance was set at $p < .05$. Power calculations (Supplementary File S2) show that for Study 1, a sample size of 35 is required, and for Study 2, a sample size of 1250, with a minimum of 63 per condition to make pairwise comparisons.[38]
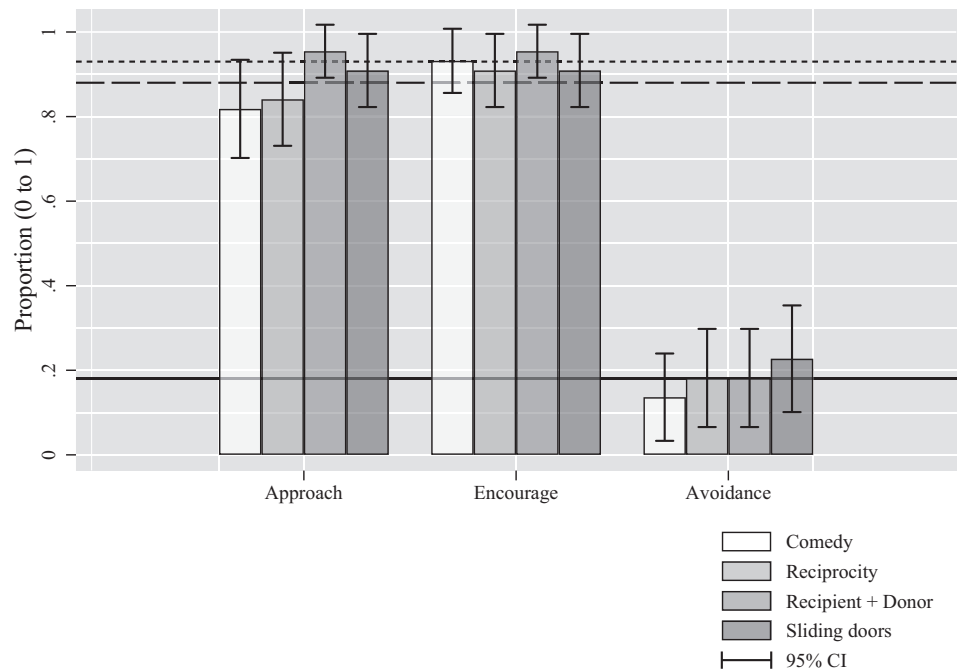
## 3 | RESULTS

## 3.1 | Study 1: Community members

The sample consists of 44 Black participants. Because this is a within-subject design, each participant evaluated all four films, making 176 evaluations. Figure 1 shows the results for behavioral efficacy across film types. Overall, approach (88.07%) and encouraging others (92.61%) were high, with avoidance (18.18%) being low. 95.45% of participants said that at least one film would encourage them to donate blood. Affect across the films was high ($M = 4.06$, CI [3.91, 4.21]), with 73.30% stating "Really Good" or "Fantastic".

Comparing films, approach was significantly higher for Donor-Recipient ($p < .05$) relative to the Comedy film. No differences were observed for encouraging others or avoidance (Supplementary File Table S2). For affect, Donor-Recipient ($M = 4.22$, CI [3.95, 4.49]) and Sliding Doors ($M = 4.38$, CI [3.06, 4.58]) were significantly higher than Comedy ($M = 3.84$, CI [3.54, 4.14]) (Supplementary File Figure S3 and Tables S3 and S4, controlling for age, previous donation status, and clustering observations at the individual level to account for repeated measures were conducted).

Community members were also asked to rank the films. The overall order with respect to the proportion of respondents who ranked a film first was the following: Sliding Doors (42.50%), Donor-Recipient (27.50%), Reciprocity (17.50%), and Comedy (12.50%). While all films were evaluated positively, it is clear that the community sample preferred the Sliding Doors film.

**FIGURE 1** Behavioral Efficacy (Community Members: Study 1). Willingness to donate blood (Approach), willingness to encourage others to donate blood (Encourage) and put off donating blood (Avoidance). Confidence intervals (CIs) are 95%. The dashed line indicates the overall mean for approach, the dotted line is the overall mean for encouragement, and the solid line is the mean for avoidance.

These results show overwhelming evidence that these short community films are well-received by community members.

## 3.2 | Study 2: General population

The sample consists of 1237 participants, with 638 self-identifying as Black and 599 as White. Figure 2 presents the results for the behavioral efficacy measures across samples (Black and White) and film types.

### 3.2.1 | Community co-design in the non-target group vs. the target group

Relative to the community sample (Study 1), the general population sample (Study 2) had a significantly lower propensity to approach ($p < .01$) and encourage others ($p < .01$). Avoidance was higher in the community sample ($p < .01$). This latter result is because the White sample has lower avoidance, on average. In the Black sample, there is no significant difference in avoidance across the community and general sample ($p = .08$) (see Supplementary File Figure S4 and Table S7). Regarding affect, the general population also rated the films lower ($p < .01$). However, while the community films have greater resonance in the community in which they were produced, there are still some positive effects observed within the general population. Thus, community-based films have some value in the general population (mean affect in the community sample $= 4.06$ out of 5, mean Black general population for community films $= 3.20$ out

of 5, mean White general population for community films $= 3.21$ out of 5).

### 3.2.2 | Co-design and franchise approaches in the nontarget group

We initially examined the value of franchise (Black Panther) and co-design films. Thus, we compared the Black Panther with the aggregate responses across the four community-based films by ethnicity (Black, White). There was no significant difference in approach ($p = .61$), encouraging others ($p = .34$) or avoidance ($p = .29$), and affect ($p = .37$) for the Black sample. Similarly, no significant differences were observed for the White sample for approach ($p = .87$), encouraging others ($p = .42$), or avoidance ($p = .82$). Affect was significantly lower in the community films ($p < .01$) (Supplementary File Figures S5,S6 and Tables S8,S9). Overall, the franchise and the community-based films are mostly equivalent in all evaluation measures, with both resulting in people indicating their willingness to donate blood (Figure 2) and expressing positive affect (Franchise mean $= 3.35$ out of 5 and community-based mean $= 3.21$ out of 5: Supplementary Figure S6).

## 3.3 | Does the content of the film matter?

Overall, franchise-based and co-design-based films generalize positively to their nontarget audiences and show clear value added in terms of generalizability. We also
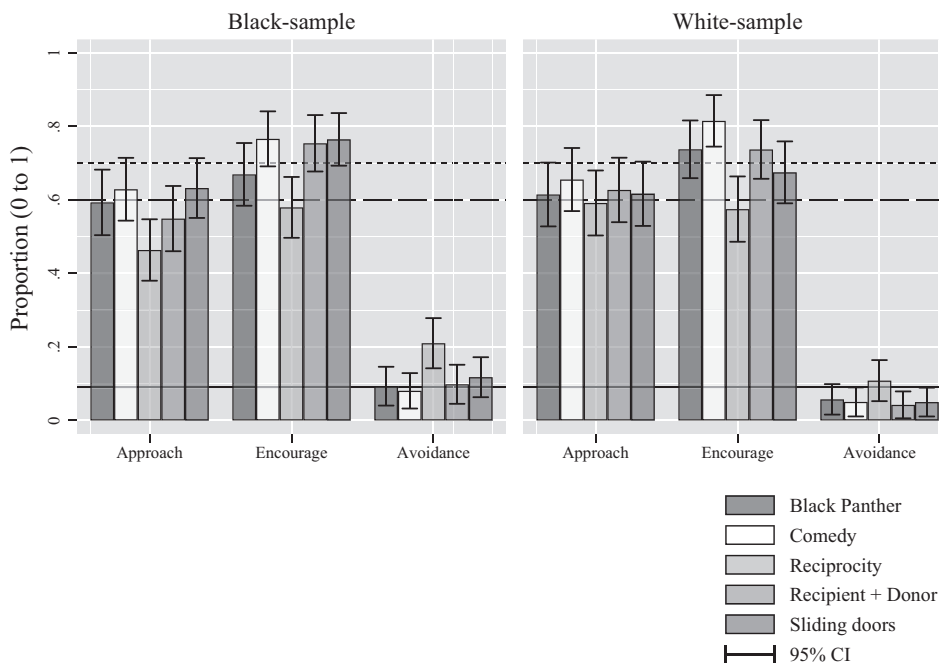
**FIGURE 2** Behavioral Efficacy (General Population: Study 2). Willingness to donate blood (Approach), willingness to encourage others to donate blood (Encourage), and put off donating blood (Avoidance). Confidence intervals (CIs) are 95%. The dashed line indicates the overall mean for approach, the dotted line is the overall mean for encouragement, and the solid line is the overall mean for avoidance.

explore if there are any effects specific to fim content. To do this, we performed pairwise comparisons between each film presented in Figure 2 for approach, encouraging others and avoidance (Supplementary File Table S10).

With respect to approach, Black people endorsed Reciprocity the lowest relative to Black Panther ($p < .05$), Comedy ($p < .01$), and Sliding Doors ($p < .01$). There were no significant effects for White people.

Encouraging others was endorsed significantly lower for Reciprocity in the Black sample compared with all other community films (all $p$ values $<.01$), with the same true of the White sample (all $p$ values $<.05$), except Sliding Doors ($p = .11$). In terms of sensitivity analysis (Supplementary File Table S12), logistic regressions of the campaign behavioral efficacy measures, controlling for age, sex, and donation status, produce identical results to those in Figure 2.

Finally, in terms of avoidance of donating, the Black sample significantly endorsed higher levels of avoidance of donating for Reciprocity than all other films (all $p$ values $< .05$).

With respect to affect, Black people reported more positive affect for the Comedy than Reciprocity ($p < .05$), and Sliding Doors ($p < .01$) films. For White people, Black Panther was endorsed more positively than Reciprocity ($p < .01$) and Sliding Doors ($p < .01$). The Comedy film is significantly higher than all other community films (all $p$ values $< .05$) (Supplementary File Figure S7 and Table S11). As a robustness check, we ran OLS regressions, controlling for age, sex, and donor status, which gave identical results (Supplementary File Table S13).

Thus, the co-designed community films and the Black Panther film performed equally well in the general population, except the co-designed Reciprocity film, which generally performed less well.

## 3.4 | Exploratory analyses

We explored the differences in behavioral effectiveness and affect by donor status, age, and gender — the results of which are summarized in Table 2 below (for more details, see Supplementary File Tables S14–S25).

### 3.4.1 | Donor status

Compared with the Black Panther film, Black non-donors were less likely to encourage others to donate after viewing the Reciprocity film, as were White donors. However, Black donors were significantly more likely to encourage others to donate after watching the Donor-Recipient film than Black Panther.

### 3.4.2 | Age

For Black people, compared with Black Panther, Millennials were more likely to encourage others to donate after viewing the Comedy film. On the other hand, Reciprocity was associated with a significantly worse campaign behavioral efficacy (less likely to approach and encourage others and more likely to avoid donating) among older

**TABLE 2**  Exploratory analysis results summary.

| Film | Donor status 👤 Donors Black | Donor status 👤 Donors White | Donor status 👤 Donors Black | Donor status 👤 Donors White | Summary |
|---|---|---|---|---|---|
| Comedy | | | | | No differences observed |
| Reciprocity | Encourage Others (↓**) | Positive Affect. (↓***) | | Encourage Others, Positive Affect (↓***) | Black non-donors are less likely to encourage others. White donors are less likely to encourage others and have lower positive affect. |
| Donor-recipient | | | Encourage Others (↑**) | | Black donors are more likely to encourage others. |
| Sliding doors | Positive Affect (↓**) | Positive Affect (↓**) | | Positive Affect (↓***) | Lower positive affect for Black donors and non-donors. Lower positive affect for White donors |

| Film | Age group 👤 Gen Z (ages 18–26) Black | White | 👤 Millennials (ages 27–42) Black | White | 👤 Gen X + boomers (>42) Black | White | Summary |
|---|---|---|---|---|---|---|---|
| Comedy | | | Encourage Others (↑**) | | | | Black Millennials are more likely to encourage others to donate |
| Reciprocity | | | Avoidance (↑***) | Positive Affect (↓***) | Approach, Encourage Others, Positive Affect (↓**) | Encourage Others (↓**) | Overall Black and White Millennials and Gen X/Boomers have lower affect and approach and greater avoidance |
| Donor-recipient | | | | Positive Affect (↓***) | | | Lower affect for White Millennials |
| Sliding doors | | | Encourage Others (↑**) | Positive Affect (↓***) | Positive Affect (↓***) | Positive Affect (↓***) | Black Millennials are more likely to encourage others. Gen X/Boomers and White Millennials have lower positive affect |

| Film | Gender 👤 Males Black | White | 👤 Females Black | White | Summary |
|---|---|---|---|---|---|
| Comedy | | Encourage Others (↑**) | | | White males are more likely to encourage others. |
| Reciprocity | | Encourage Others (↓***) | Approach (↓**), Avoidance (↑***) | Positive Affect (↓***) | Overall, White males are less likely to encourage others, and Black and White females show lower positive affect, reduced approach, and enhanced avoidance. |
| Donor-recipient | | | | | No differences observed |
| Sliding doors | | Positive Affect (↓**) | Positive Affect (↓***) | Positive Affect (↓***) | Black and White females and White males show lower positive affect |

*Note*: Summary of results from several logistic regressions for behavioral efficacy (Approach, Encourage Others, and Avoidance) and OLS for Positive Affect. Explanatory variables are the films: Comedy, Reciprocity, Donor-Recipient, and Sliding Doors (reference category: Black Panther). Significant negative coefficients are indicated by (↓), and significant positive coefficients are indicated by (↑). Statistical significance: ***$p < .01$; and **$p < .05$.

Black and White generations compared with Black Panther. Black Millennials responded well to Sliding Doors in terms of encouraging others, but Gen X + Boomers and White Millennials showed lower positive affect compared with Black Panther.

### 3.4.3 | Sex

Apart from the Comedy film, which was seen to enhance encouraging others in White males, Reciprocity and Sliding Doors led to a reduced approach, enhanced avoidance, and reduced positive affect in all but Black men.

## 4 | DISCUSSION

The results show the effectiveness of film-based arts approaches (co-designed community-based and major franchise collaborations) in positively affecting the target audience and, importantly, generalizing this positive impact to nontarget audiences. Thus, we see value added for both approaches.[16]

In particular, examining the four community films within the community sample they were designed for shows that all were highly evaluated and valued. Participants showed a high willingness to donate after watching these films, with particularly positive emotional responses to the Donor-Recipient and Sliding Doors films. Similarly, within a wider nontarget population, three of the community films (Comedy, Donor-Recipient, and Sliding Doors) and the NHSBT Black Panther collaboration were positively received in terms of propensity to donate in both Black and White samples, as well as emotional engagement. Emotional engagement is critical as it is the key proposed theoretical mechanism by which arts-based approaches work.[5,37] Emotional engagement was particularly high for the Black Panther collaboration. These results show the universal appeal of the film-based arts approaches that transcend the communities they were explicitly designed for.

The exploratory analysis provided further insights. While the Black Panther film was originally intended to attract younger Black donors,[21] the results show that it resonated more, in terms of positive affect, with older generations (Gen X and Boomers) in a general population sample. It is not clear why this is and requires further investigation. It may be that older generations are more aware of the historical significance surrounding the film and its link to the need for more donors[39,40] of Black heritage.

It is also helpful to consider 'costs', both in terms of direct financial costs and the feasibility. For community films, the financial costs—including location, production,

and post-production—amounted to £12.5 k ($15.78 k). The Disney collaboration, on the other hand, incurred no costs for NHSBT, as it was done pro bono. However, for such collaborations to be feasible, the film must align with blood donation needs, and the Blood Collection Agency (BCA) involved must be well-resourced (including legal and contract teams) and have a sufficiently large donor base to appeal to the production company as an attractive partner. Community-based films, on the other hand, might be more feasible as all BCAs can work with local communities to produce recruitment films that can be made on an ongoing basis and in response to local needs. This responsiveness increases the flexibility of community-based films. It is also of note that several Oscar-nominated films have been shot on smartphones, demonstrating the potential for high-quality production with minimal resources.[39,40]

### 4.1 | Limitations

We recognize the inherent challenges in broadly categorizing ethnicity as Black and White as oversimplifying the rich diversity and heterogeneity within these communities. Although ethnicity serves as a proxy for culture to some extent, it does not wholly represent cultural nuances.[41–43] Future research would benefit from considering other distinguishing factors like country of birth, nationality, etc.[23] It is possible that the community films fared similarly to Black Panther because they were longer. However, we recorded how long participants watched the films and found no relationship between the time watched and any of the measures of campaign efficacy. Finally, we asked about the propensity to donate, not actual behavior. However, previous research has found this measure has a 10% conversion rate to actual donation, meaning that these films should result in an approximate 4%–6% increase in donations.[26]

### 4.2 | Implications for blood services around the world

There is unambiguous evidence (reflected in real-world data) that the NHSBT Black Panther collaboration is successful in raising the number of registrations and donors,[22] and we show that this potential success generalizes to nontarget populations. However, not all BCAs have the organizational resources and reach of the NHS to make such a collaboration possible. Thus, for BCAs operating with more limited resources in smaller markets (i.e., low- and middle-income countries), co-designed community-based films may be a valuable way forward. Ultimately, a more

diversified approach, leveraging both high-profile (where possible) and community-centered approaches, is likely to be most effective in facilitating blood donation.

# 5 | CONCLUSIONS AND NEXT STEPS

Both franchise and community-based approaches have critical roles to play in the landscape of blood donor recruitment. The key is not choosing one over the other but understanding how to leverage each strength based on context, objectives, and organizational resources. The next steps involve further refining these approaches based on the insights gathered from this research, which would ultimately involve developing the community films further and evaluating their impact systematically within an RCT.

## AUTHOR CONTRIBUTIONS
RM ran the study online and analyzed the data. AO and EF led the development of the scripts and films. NA was a research assistant providing valuable feedback and interpretation of the results and materials. MC, AK, and NE were involved in the collaboration with Marvel Studios and provided useful feedback on the community-based films. EDA, AW, BM, and EF head up the BTRU in Donor Health and Behaviour. All authors provided comments on the draft.

## CONFLICT OF INTEREST STATEMENT
None of the authors declared any conflicts of interest.

## ETHICS STATEMENT
This research was reviewed and approved by the Ethics Review Board in the School of Psychology, University of Nottingham (F1351: 30/05/2022; F1366: 06/07/2022; F1411: 03/02/2023; F1422: 22/02/2023).

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.