

# BONDING THROUGH ADVERSITY: EFFECTS OF BREXIT AND COVID-19 LOCKDOWN ON IDENTITY FUSION AND PRO-GROUP BEHAVIOUR

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### **Abstract**

In early 2020, the UK experienced two significant events: Brexit and a nationwide pandemic lockdown. Brexit led to a divisive split between those in favor of leaving the EU and those in favor of remaining. In contrast, the lockdown initially prompted unity and cooperation across the nation. This study, drawing on imagistic events and identity fusion concepts, examines how Brexit and the lockdown influenced both group polarization and cohesion.

We conducted a natural experiment ( $N = 703$ ), collecting data before and after Brexit's official withdrawal and following the lockdown's implementation. Our goal was to explore these events' impact on emotional states, identity fusion with political and social groups, and subsequent effects on pro-group behaviors and polarization.

Both Brexit and the national lockdown had an impact on participants' emotional well-being but also forged enduring memories and played a role in shaping their identities. Individuals who displayed a stronger attachment to their political affiliations exhibited heightened levels of polarization. Furthermore, Brexit initiated a process of weakening the bonds among Britons themselves, and even the national lockdown did not reverse these trends. Nevertheless, the lockdown did contribute to the restoration of identity fusion with other Europeans, which had been undermined by Brexit.

*Keywords:* Brexit, COVID-19, polarization, identity fusion

## 1. Introduction

In the early 2020s, the United Kingdom underwent two unprecedented events that significantly impacted its social life: Brexit and the COVID-19 pandemic. On January 31, 2020, the United Kingdom officially withdrew from the European Union. The referendum itself created a major shift in British politics, leading to internal civil strife between the Leavers (those who voted to leave the EU) and the Remainers (those who wanted to remain). The pandemic-triggered lockdown was also a major national upheaval, imposing restrictions on movement and social interactions, accompanied by extensive media coverage of deaths and illnesses.

Such experiences have been described as ‘imagistic’ because they produce enduring mental images in the form of personally transformative and group defining flashbulb memories (Whitehouse, 2004, 2021). Such imagistic experiences have the potential to significantly influence group bonding processes among those who share them. Whitehouse's theory of extreme self-sacrifice (2018) provides a framework for understanding the psychological processes that unfold when individuals experience imagistic events. Central to this theory is the concept of identity fusion—a visceral feeling of oneness with the group (Gómez et al., 2020). This mechanism facilitates the pro-group effects often observed following imagistic experiences.

In identity fusion, the person's personal identity (aspects that make them unique) becomes functionally equivalent to their social identity (aspects that align them with groups) (Swann & Buhrmester, 2015). Identity fusion has significant behavioral implications: individuals with higher levels of identity fusion tend to act more prosocially towards their group (Carnes & Lickel, 2018), cooperate more (Newson et al., 2021), and, when the group is admired or under threat, show a greater willingness to engage in self-sacrificial behavior (Gómez et al., 2021).

So far, research on imagistic events has predominantly focused on collective rituals promoting group cohesion (e.g., Baranowski-Pinto et al., 2022), cooperation and pro-group sacrifice (e.g., Fischer et al., 2013). However a growing body of studies suggest that events lacking a strong ritualistic component – ranging from painful childbirths (Tasuji et al., 2020), to terrorist atrocities (Buhrmester et al., 2015); and from experiences of frontline combat (Whitehouse et al., 2014), to losing football matches (Newson et al., 2018) and suffering electoral defeats (Kapitány et al. 2020) – are also capable of triggering imagistic effects on group bonding. In particular, previous research has shown that the Brexit referendum was experienced by supporters of the Remain campaign in the UK as an imagistic

event involving intense emotions, flashbulb memories, and shared personally transformative elements (Muzzulini et al., 2022).

The role of identity fusion in shaping pro-group behaviour in large-scale political events was also explored in two studies concerning the 2016 presidential election victory of Donald Trump. Misch and colleagues (2018) found that identity fusion predicted prosocial ingroup giving, especially before the election. Similarly, Kapitány and colleagues (2020) conducted a 7-week longitudinal examination of the 2017 presidential inauguration of Donald Trump and how it impacted both supporters (Republicans) and opponents who backed Hillary Clinton (Democrats). The inauguration was examined as a meaningful state ritual for both groups, and it was hypothesized that such an event could evoke strong emotional responses, generate flashbulb memories, and promote reflection. As predicted, the study found that fusion with political groups was associated with a greater willingness to fight and die for the groups. Another notable finding from the study was that changes in positive affect were more strongly associated with changes in identity fusion than changes in negative affect. This was consistent with previous research emphasizing the association of post-event positive affect attribution on identity fusion levels in the context of martial arts promotion rituals (Kavanagh et al., 2019).

### **1.1. Current Study**

Up until now, it has been assumed that imagistic experiences lead to long-lasting forms of group alignment. But what happens to bonds with a group formed in this way when another imagistic event occurs – one that is shared with a community that cuts across the previously bonded group? The Brexit referendum outcome is a case in point. This was clearly a shared dysphoric experience for Remain supporters but not for Leavers, thus dividing the UK into two polarized camps. However, very soon after the UK finally left the EU, another imagistic experience struck: COVID-19 lockdown. This new experience was shared by Remainers and Leavers alike. Not only was the lockdown a potentially imagistic experience for all Britons, transcending the divisions caused by Brexit, but also an experience that many felt to be shared with their fellow Europeans. How did this cross-cutting shared experience impact the polarizing effects on Britain's departure from the EU? Did it strengthen or weaken the effects of earlier imagistic experiences – and if so, how? To the best of our knowledge, this is the first study to explore these issues in any depth, using the full suite of measures relevant to the study of imagistic group bonding.

The Brexit process was experienced differently by Remainers and Leavers. Remainers viewed the UK's official withdrawal from the European Union as a failure, while Leavers celebrated it as a

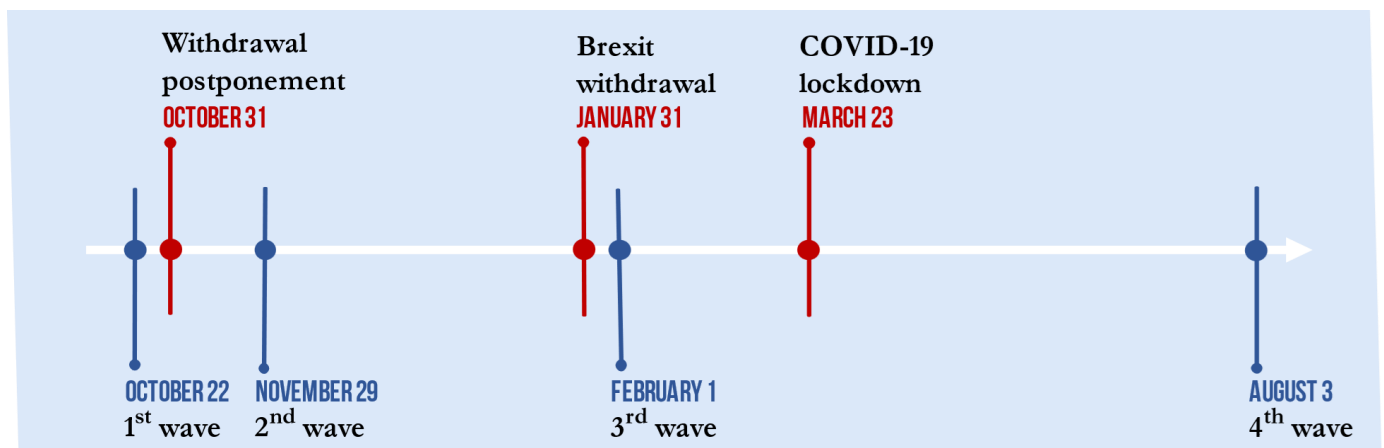
success. This stark contrast in perspectives led to divergent experiences of the same event. In contrast, the COVID-19 lockdown had a more uniform impact across the population. Both Leavers and Remainers faced the same nationwide restrictions, regardless of their stance on Brexit. The government-imposed limitations on movement, social gatherings, and daily activities applied equally to all citizens. This universal application of rules created a shared experience that transcended political divisions. Furthermore, lockdown was supported by 93% of Britons (Cabinet Office, 2023) and by all major political parties. Further details on the social context of these events are described in the Supplement.

Although both Brexit and the lockdown were part of broader political processes with long-term consequences, our focus was on the psychological effects of specific, clearly defined imagistic events: the official Brexit withdrawal on January 31, 2020, and the implementation of the national COVID-19 lockdown on March 23, 2020.

The study design was modified as the events revolving around Brexit unfolded. All modifications were recorded in the series of preregistrations and are available online (<https://osf.io/u84he>). The study was conducted over four waves, at different time points: T1 (22 – 30 October 2019); T2 (29 November – 11 December 2019); T3 (1 – 11 February 2020); and T4 (3 – 13 August 2020). The Timeline with the most important dates is presented in Figure 1.

## Figure 1

### *Study Timeline with the Most Important Events*



Our study applies Whitehouse's (2018) conceptual framework for studying extreme self-sacrifice. Whitehouse's work synthesizes decades of interdisciplinary research, proposing a psychological mechanism that explains why people who experience imagistic events become more fused with their group identity and, consequently, act more pro-group.

Our study focused on identity fusion in four groups: Remainers, Leavers, Britons, and Europeans. We also examined identity fusion with family, treating it as a control for our experiment. We assumed that identity fusion with family would remain stable in response to events like Brexit and lockdown. The primary groups of interest were Remainers and Leavers, two new factions that emerged after the Brexit referendum and divided the British people. We also explored identity fusion with other Britons and Europeans, as these groups are central to the Brexit context. We hypothesized that Brexit might have weakened identity fusion with Europeans while strengthening it with Britons, potentially affecting Leavers and Remainers differently. In the context of the lockdown, measuring identity fusion with other Britons and Europeans was crucial to establish, whether the shared threat, experienced by both Remainers and Leavers, had the power to unite people in these wider, pandemic-affected contexts.

Our hypotheses based on this framework are listed in the sections below. They have been reworded for clarity but their substantive content accords with the pre-registration documents. We have made slight deviations from the preregistration, and these are detailed in the Supplement along with the reasons for these adjustments.

### ***1.1.3. Brexit and the Lockdown as Imagistic Events***

Firstly, we aimed to investigate whether Brexit and the COVID-19 lockdown possessed imagistic qualities. According to the theory of extreme self-sacrifice framework (Whitehouse, 2018), imagistic events are characterized by high emotional intensity. This emotional affect, both positive and negative, leads to the formation of vivid flashbulb memories. Research shows that emotionally charged events create enduring memories (Conway, 2013) which remain emotionally salient even if inaccurate (Hirst et al., 2015). Such memories often become a source of personal reflection and can significantly shape both personal and group identities (Berntsen, 2009). This part of our study focused on testing the imagistic qualities of Brexit and the COVID-19 lockdown among both Leavers and Remainers. We hypothesized that both groups experienced these events as imagistic.

**H1.** The UK's official withdrawal from the EU on Jan 31st and the introduction of the COVID-19 lockdown will be experienced as an imagistic experience for both Remainers and Leavers.

- **H1.A.** Both Remainers' and Leavers' affect will change from T1/T2 (baseline) to T3 (Brexit) and T4 (lockdown).
- **H1.B.** Both Remainers and Leavers will get high scores on indicators of flashbulb memory at T4 both for Brexit and the lockdown.
- **H1.C.** Both Remainers and Leavers will experience high levels of personal identity transformativeness at T4 both for Brexit and the lockdown experiences.

#### ***1.1.4. Effects of Brexit and the Lockdown on Group Alignment***

In the second part of our study, we aimed to test whether potential imagistic events, Brexit and lockdown, influence group alignment of Remainers and Leavers through identity fusion with their ingroups. Identity fusion is stronger among those who experience imagistic events more positively (Kavanagh et al., 2019), those who deliberately reflect upon the imagistic event (Jong et al., 2015), and those who think that they share experiences of imagistic events with their in-group (Reese & Whitehouse, 2021). This part of our study focused on testing whether Brexit and the COVID-19 lockdown increased identity fusion among Leavers and Remainers. We tested whether identity fusion measure is stable during waves of data collection preceding imagistic events, examined three psychological pathways between imagistic events and identity fusion, and tested whether mechanisms responsible for identity fusion are also responsible for changes in group identification.

**H2.** Imagistic experiences will be associated with increased levels of identity fusion with relevant in-groups (Remainers vs Leavers).

- **H2.A.** There will be no changes in identity fusion between Time 1 and Time 2 (baseline levels).
- **H2.B.** Positive affect at Time 4 will be more associated with identity fusion at Time 4 compared to negative affect at Time 4.
- **H2.C.** At T4, participants' deliberative reflection and perceived shared experiences with the group they have shared their experiences the most will be positively associated with identity fusion towards this specific ingroup.
- **H2.D.** The relationships specified in H2.B. and H2.C. will be stronger with identity fusion than with matched group identification.

### ***1.1.5. Identity Fusion and its' effects on Pro-Group Outcomes***

The third part of our study examined the relationship between identity fusion and pro-group outcomes. Substantial body of scientific literature supports the link between identity fusion and extreme pro-group orientation (Varmann et al., 2024). Furthermore, studies suggest that in antagonistic relationships with out-groups, identity fusion motivates people to inflict harm on their adversaries (Klein & Bastian, 2023). Some researchers argue that identity fusion and group identification are identical constructs, rendering a separate concept unnecessary to explain pro-group behaviors (Gómez et al., 2020). However, research indicates that the effects of identity fusion are significantly stronger (Varmann et al., 2024).

This part of our study tested the relationship between identity fusion and pro-group outcomes (H3). Specifically, pro-group sacrifice, parochial altruism and polarization between Remainers and Leavers. We have also tested whether these potential effects are indeed caused by identity fusion rather than group identification.

**H3.** Identity fusion levels with relevant ingroup will be positively associated with pro-group outcome.

- **H3.A.** Identity fusion with the most relevant ingroup target at T4 will be positively associated with the endorsement of costly pro-group sacrifice and ingroup favouritism.
- **H3.B.** Identity fusion with partisan ingroup targets (Remainers vs Leavers) will be positively associated with parochial altruism and political polarization toward matched ingroup targets.
- **H3.C.** The relationships specified above (H3.A. and H3.B.) will be stronger with identity fusion than with matched group identification measures.

## **2. Methods**

The measures used in the study are presented in Table 1. We have calculated mean scores for all composite measures and used them in our analyses in this form.



**Table 1***Measures that Were Used in the Study at Each of the Four Waves of Data Collection*

Measure	Wave of Data Collection				Item Scale	Example Items Wave of data collection
	T1	T2	T3	T4		
Demographics	●				-	Gender, age, voting during the Referendum
Identity fusion	●	●	●	●	0 (no overlap) to 100 (complete overlap)	Family; Remainers; Leavers; Britons; Europeans
Group Identification	●	●	●	●	1 (not at all) to 7 (extremely)	I identify with [group or category]: Family; Remainers; Leavers; Britons; Europeans
Affective response	●	●	●	●	1 (very slightly or not at all) to 5 (extremely)	Positive affect: interested, excited, and strong. Negative affect: distressed, upset, and guilty.
Reflection on the event			●	●	1 (never) to 7 (very often)	Intrusive: I found myself automatically thinking about what happened. Deliberative: I thought about whether I could find meaning from Brexit.
Personal identity transformativeness				●	1 (not at all) to 7 (very much)	My experience of Brexit/the pandemic: ...has become part of my identity.
Flashbulb memories				●	1 (not at all) to 7 (very much)	When thinking back to the official withdrawal: Richness: I remember very clearly where I was and what I was doing. Visceralness: I feel tense all over.
Group importance				●	1 (not at all important) to 7 (extremely important)	Family; Remainers; Leavers; Britons; Europeans
Experienced sharedness				●	1 (not at all) to 7 (very much)	Family; Remainers; Leavers; Britons; Europeans
Pro-group sacrifice				●	1 (completely disagree) to 7 (completely agree)	I would commit to more strict social distancing measures.
Pro-group donation				●	0-100	British Academy; European Research Council; World Health Organization

## **2.1. Participants**

The final sample used in the study consisted of 703 participants who fully completed each of the four stages of the study. Among them, 424 identified themselves as women, and 273 as men. Six people identified as Other. During the Brexit referendum, 44.8% of our participants voted Remain and 55.2% voted Leave. Details of the data collection, additional sample characteristics, drop-off rate between the waves, and the differences between those who dropped out and those who remained through all four waves are presented in the Supplement.

The study was conducted online, through Prolific. Compared to other platforms, such as MTurk, Qualtrics, and SONA, subjects recruited for research using Prolific provide higher quality data, pass attention tests better, follow instructions better, remember previously presented information, have unique IP numbers, geolocation data, and work at a pace that allows them to read all materials used in the study with attention (Douglas et al., 2023).

## **2.2. Measures**

### ***2.2.1. Identity Fusion***

To measure identity fusion, we used the Dynamic Identity Fusion Index (DIFI, Jiménez, et al., 2016). DIFI is a computer-based method that allows for a higher fidelity measure, compared to other measures of identity fusion, such as the verbal scale or simple pictorial measure. The participants were presented with a two-circle figure and asked to move a smaller circle that represents “the self” onto a bigger circle that represents a given group. The relationship between the circles indicates a relationship between “the self” and the group.

### ***2.2.2. Group Identification***

To compare the effects of identity fusion with the effects of group identification, we included the single-item social identification measure (SISI; Postmes, et al., 2013). Participants indicated their level of agreement with this statement for all the same target groups used in the identity fusion measure. This allowed for a direct comparison between identity fusion and group identification across these different social categories.

### ***2.2.3. Affective Response***

To measure affective responses, we used the 10-item version of the Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1999). The PANAS is a widely used psychological tool designed to assess general emotional experiences. It consists of two subscales: Positive Affect (PA) and Negative Affect (NA), each containing 5 items. Participants were asked to indicate the extent to which they experienced each of the 10 emotions.

The participants were asked to indicate the feelings they experienced during the week preceding the relevant study (Time 1-2) and the feelings they experienced at the time of the study, when the United Kingdom officially left the European Union (Time 3), and after imposing the lockdown (Time4). The measures of positive and negative affect (5 items each) showed strong reliability (T1 positive  $\alpha = .84$ , negative  $\alpha = .85$ ; T2 positive  $\alpha = .85$ , negative  $\alpha = .86$ ; T3 positive  $\alpha = .90$ , negative  $\alpha = .92$ ; T4 positive  $\alpha = .90$ , negative  $\alpha = .93$ ).

### ***2.2.4. Reflection on the Event***

The participants reported their intrusive and deliberative reflections on Brexit (3 items each), representing two main types of rumination (Cann et al., 2011). Intrusive reflections are unwanted thoughts focusing on negative perceptions of traumatic events. Deliberate reflections involve proactive, repetitive contemplation of the event and related clues. While our hypotheses only addressed deliberative reflection, we measured intrusive reflection as a control to ensure identity fusion wasn't influenced by this type.

The participants were asked to answer how often they experienced intrusive thoughts immediately after official withdrawal (Time 3) or in the time following withdrawal (Time 4). The scales showed strong reliability (T3 intrusive  $\alpha = .90$ , deliberative  $\alpha = .81$ ; T4 intrusive  $\alpha = .93$ , deliberative  $\alpha = .86$ ). These items were not asked relating to the national lockdown experiences as there had not been adequate time for longer term reflective processes to take place.

### ***2.2.5. Personal Identity Transformativeness***

The participants responded to a repeated 4-item scale, rating the level of personal identity transformativeness with two targets 1) the experience of Brexit and the 2) experience of the pandemic. The scale used in the study consisted of items adapted from the Centrality of Event Scale (Berntsen, 2009). The scales showed strong reliability (Brexit transformativeness  $\alpha = .88$ , pandemic transformativeness  $\alpha = .89$ ). To address H1.C. we have divided the scores into thirds. We did this to compare the proportion of

participants that rated their experience of Brexit or the pandemic as highly transformative events (scores 5-7) with those who judged Brexit or the pandemic to be either somewhat (scores 3-4) or not transformative events (scores 1– 2).

### ***2.2.6. Flashbulb Memories***

We measured flashbulb memory relating to Brexit with six items. Three of them measured memory richness and included information on the reception context. The items demonstrated strong reliability ( $\alpha = .92$ ). Another three of the items measured the visceralness of Brexit — a subjective physical experience associated with recalling the event (Talarico & Rubin, 2003). The participants were asked to answer how they *feel* when thinking back to the official withdrawal. The items demonstrated strong reliability ( $\alpha = .88$ ).

For the lockdown announcement, we assessed memory richness with the following instruction: *Thinking back to when the lockdown was announced, to what extent do you remember details of that day? Details may include the people you were with, the location in which you were, the moment of the day in which you learned about the news, etc.* To assess memory visceralness for the lockdown, we provided the participants with the following instruction: *How intense is your physical reaction when thinking back to the lockdown announcement? Physical reactions include feeling tense all over, experiencing goosebumps, or feeling knots in your stomach.* The two items were moderately correlated at  $r = .53$ ,  $p < .001$ , but an average score was calculated to the same range 1-7 as the Brexit measures to aid comparisons.

To address H1.B. we have divided the scores into thirds to compare the proportion of participants that rated Brexit or the national lockdown as events that induced strong flashbulb-like memories (scores: 5-7) with those who judged the events to induce somewhat (scores 3-4) or no flashbulb memories (scores 1– 2).

### ***2.2.7. Group Importance***

We asked participants to rate the extent to which they considered each of the aforementioned groups important for their identity. This measure was intended to help us identify the most salient ingroups for each participant. Participants rated the importance of each group on a scale, allowing us to understand which social categories were most central to their self-concept in the context of Brexit and the ongoing political changes.

### ***2.2.8. Experienced Sharedness***

The participants estimated the degree to which they shared their experiences of Brexit with their families, Remainers, Leavers, other Britons, and Europeans. Perceived sharedness is particularly

important for personal identity, as this produces a sense of psychological kinship). This measure allowed us to assess the extent to which participants felt their Brexit experiences were shared across different social groups, providing insight into the social nature of these experiences.

### **2.2.9. Pro-group Sacrifice**

The participants were asked to determine with which group they share the most pandemic experiences. Then, they were presented with the following instruction: *The UK is soon hit by a second wave of COVID-19: This might put the lives of other <Remainers/Leavers/Britons/Europeans> and their families at high risk. Knowing that in the midst of a second wave the actions listed below would certainly save the lives of other <Remainers/Leavers/Britons/Europeans> and their families, to what extent would you be prepared to accept the following?* Next, the participants estimated to which degree they would be willing to undertake eight behaviours. The list of sacrifice behaviours is presented in Table S2 in the Supplementary material. The items demonstrated strong reliability ( $\alpha = .86$ ).

### **2.2.10. Pro-group Donation**

The participants were presented with a hypothetical scenario in which they were given the opportunity to split an inherited £100 million between three targets researching the covid pandemic, the targets were distinguished by one being UK-based (British Academy), one Europe-based (European Research Council), and one a Worldwide organisation (World Health Organization). The total amount that participants could allocate was fixed. A donation to one foundation meant that other foundations had to receive less money. Participants allocating the funds provided us with information about their motivation to support groups affected by Brexit - their willingness to support a UK target, a European target, and a worldwide target that was outside of the Brexit conflict. The variable ranged from 0 to 100. For example, if a participant allocated 50 million pounds to the British Academy, 25 million pounds to the European Research Council, and 25 million to the World Health Organization, the variables would be as follows: the UK-based target would have 50 units, the Europe-based target 25 units, and the worldwide target 25 units.

## 2. Analyses and Results

Our study involved numerous statistical procedures — for clarity, we describe them before the results, in the context of tested hypotheses. All the analyses were conducted using Jamovi software (The Jamovi project, 2021). Sensitivity analysis (Supplement) suggests that using an alpha level of 0.05 and 80% power we were able to detect satisfyingly small effect sizes of  $f = 0.12$ . Also, we included a Bonferroni correction — in sum we conducted 25 tests, and therefore we regarded only the effects with  $p < .002$  as those in favour of  $H_1$ . The database is available online (<https://osf.io/n8hu2>).

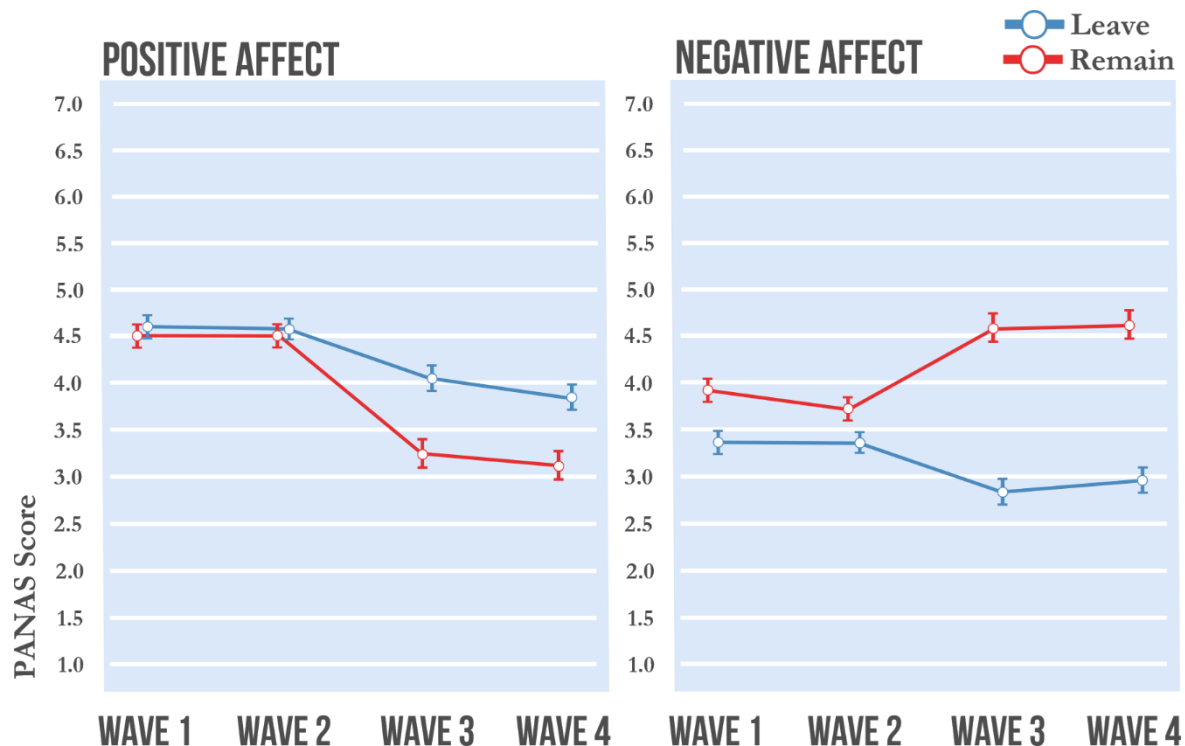
### 3.1. Brexit and the Lockdown as Imagistic Events

#### 3.1.1. Positive and Negative Affect

To test hypothesis H1.A., we conducted two two-way repeated-measures ANOVAs — one with positive, and the second with negative affect as the dependent variable. Time (T1 – T4) and Vote (Remain vs. Leave) were included as factors. The data did not meet the sphericity assumption (Maulchy's test  $p < .001$ ) and therefore we included the Huynh-Feldt correction. A graph showing the estimated marginal means for these models is shown in Figure 2.

**Figure 2**

*Estimated Marginal Means for Models Predicting Positive and Negative Affect Among Remainers and Leavers*



We observed significant effects of the time of measurement for both the Remainers and Leavers for changes in positive (Time  $F(2.75, 1929.15) = 243.4, p < .001, \eta^2_G = 0.13$ ; Vote  $F(1, 701) = 31.5, p < .001, \eta^2_G = 0.03$ ; Time\*Vote  $F(2.75, 1929.15) = 28.9, p < .001, \eta^2_G = 0.02$ ) and negative affect (Time  $F(2.59, 1816.85) = 7.92, p < .001, \eta^2_G = 0.01$ ; Vote  $F(1, 701) = 190, p < .001, \eta^2_G = 0.13$ ; Time\*Vote  $F(2.59, 1816.85) = 86.49, p < .001, \eta^2_G = 0.05$ ).

We found no significant changes in positive affect between baseline measures at Time 1 and Time 2. We observed, that after the Brexit, at Time 3, positive affect decreased both for Remainers ( $M T2 - M T3 = 1.25, p < .001$ ) and Leavers ( $M T2 - M T3 = 0.52, p < .001$ ), with Leavers experiencing a smaller decrease (Leavers  $M -$  Remainers  $M = 0.80, p < .001$ ). Positive affect did not change significantly from Time 3 to Time 4 measurement, but Remainers did experience less positive affect than Leavers did (Leavers  $M -$  Remainers  $M = 0.72, p < .001$ ).

We found no significant changes in negative affect between baseline measures at Time 1 and Time 2, but Remainers declared more negative affect than Leavers ( $M T1$  Remainers  $- M T1$  Leavers  $= 0.51, p < .001$ ;  $M T2$  Remainers  $- M T2$  Leavers  $= 0.37, p = .004$ ). We observed, that after Brexit, at Time 3, the negative affect decreased for Leavers ( $M T2 - M T3 = 0.51, p < .001$ ), but increased for Remainers ( $M T2 - M T3 = -0.84, p < .001$ ). The group differences were also significant (Remainers  $M -$  Leavers  $M = 1.71, p < .001$ ). Both Leavers and Remainers did not change in the level of their negative affect at Time 4, and Leavers still declared less negative affect (Remainers  $M -$  Leavers  $M = 1.62, p < .001$ ).

### 3.1.2. Flashbulb-Like Memories

To examine hypothesis H1.B., we compared the proportion of participants who rated Brexit or the national lockdown as events that induced strong flashbulb-like memories compared to those who judged the events to induce somewhat or no flashbulb events. The distribution converted into comparable per cent scores is presented in Table 2.

**Table 2**

*The Distribution of Flashbulb-like Memories Scores of the Brexit and the Lockdown Events*

Event	No FB memories	Some FB memories	Strong FB memories
Brexit	72.5%	23.5%	4.0%
Lockdown	10.8%	55.5%	33.7%

### 3.1.3. Identity Transformativeness

To examine hypothesis H1.C, we compared the proportion of participants that rated their experience of Brexit or the lockdown as highly transformative events compared to those who judged Brexit or the lockdown to be either somewhat or not transformative events. The distribution is presented in Table 3. Also, we compared Brexit and the lockdown transformativeness ratings with paired samples t-test.

**Table 3**

*The Distribution of Identity Transformativeness Scores of the Brexit and the Lockdown Events*

Event	Not transformative	Somewhat transformative	Highly transformative
Brexit	57.6%	35.4%	7.0%
Lockdown	39.7%	44.4%	15.9%

Overall, our results indicated that 42.4% of our sample regarded Brexit as somewhat to highly transformative, whereas this figure was 60.3% for the lockdown. It was rated as more transformative than the Brexit (Lockdown  $M - \text{Brexit } M = 0.75, p < .001, d = 0.42$ ).

### 3.2. Effects of Brexit and the Lockdown on Group Alignment

We conducted a set of repeated measures ANOVAs to verify how identity fusion with Family, Remainers, Leavers, Britons, and Europeans changed over time. We included Voting behaviour as a controlling factor. The descriptive statistics are presented in Table S5 in the Supplement.

We found no significant differences in identity fusion scores between Time 1 and Time 2, supporting hypothesis H2.A. Time and Voting choice had no impact on identity fusion with one's family across all time points.

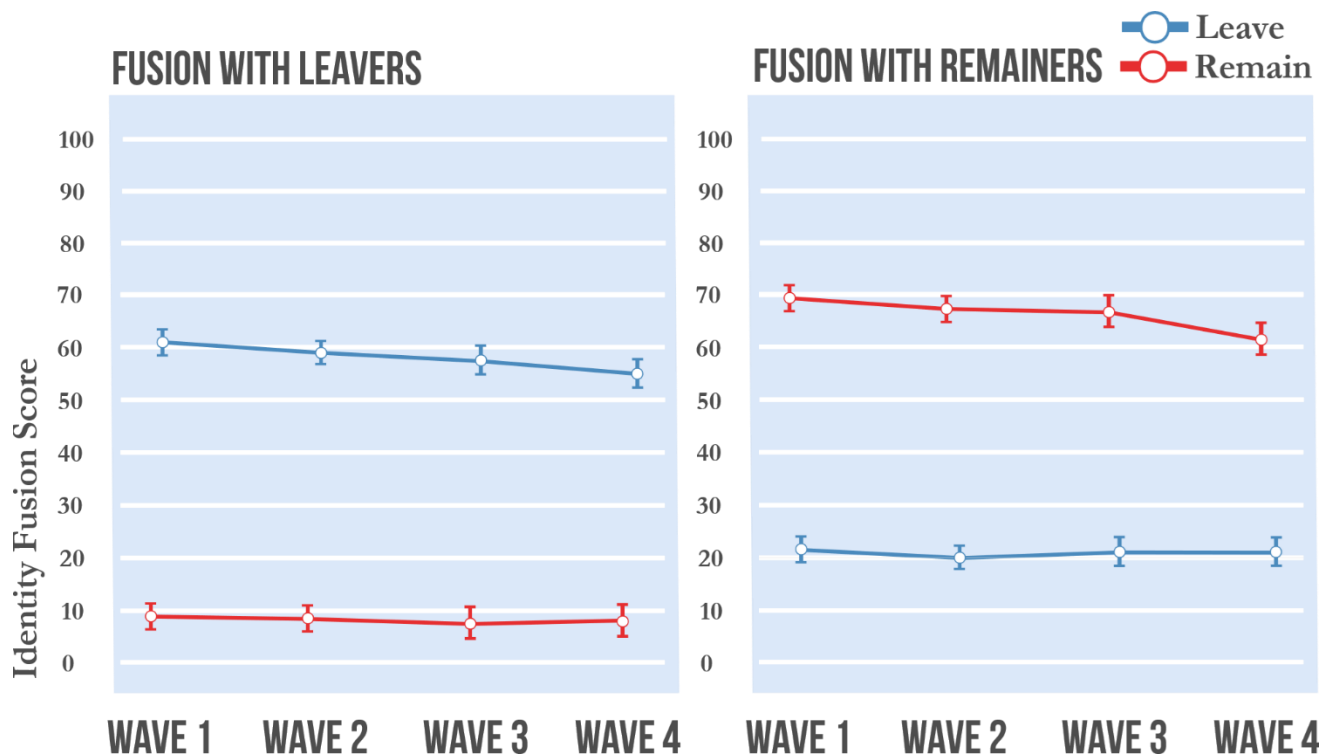
We found significant effects of Time (H-F  $F(2.92, 2042.77) = 5.04, p = .002, \eta^2_G = 0.01$ ) and Voting (H-F  $F(1, 699) = 412, p < .001, \eta^2_G = 0.30$ ) on identity fusion for participants with the target of Remainers (Figure 3). Specifically, identity fusion for Remain voters with other Remain voters was significantly lower during Time 4 compared to Time 1 (M Difference = 4.36,  $p = .002$ ). Predictably, Remain voters were more fused with other Remain targets as compared with Leave targets (M



Difference = 44.6,  $p < .001$ ). Identity fusion with the Leave target was associated only with Voting ( $H-F F(1, 698) = 560, p < .001, \eta^2_G = 0.37$ ), specifically, Leave voters were more fused with Leave targets than with Remainer targets (M Difference = 49.7,  $p < .001$ ; Figure 3). Time was not associated with changes in identity fusion for Leave targets.

**Figure 3**

*Estimated Marginal Means for Models Predicting Identity Fusion with Leavers and Remainers (Targets) Among Remainers and Leavers*



Identity fusion with the British target was associated with Time ( $F(3, 2091) = 10.83, p < .001, \eta^2_G = 0.01$ ) and Voting ( $F(1, 697) = 44.3, p < .001, \eta^2_G = 0.04$ ). Identity fusion with the British was lower at Time 4 compared to Time 1 (M Difference = 6.53,  $p < .001$ ) and Time 2 (M Difference = 5.13,  $p < .001$ ). Also, Leave voters were more fused with the British target than Remain voters (M Difference = 16.5,  $p < .001$ ).

Identity fusion with Europe was associated with Voting ( $F(1, 696) = 204, p < .001, \eta^2_G = 0.17$ ), and Time ( $F(3, 2088) = 13.22, p < .001, \eta^2_G = 0.01$ ). Identity fusion with Europe decreased from T1

to T2 (M Difference = -4.41,  $p = .001$ ), from T1 to T3 (M Difference = -5.66,  $p < .001$ ), and increased from T2 to T4 (M Difference = 4.64,  $p < .001$ ) and from T3 to T4 (M Difference = 5.89,  $p < .001$ ). Predictably, Remain voters were more fused with Europe than Leave voters (M Difference = 30.5,  $p < .001$ ).

Identity fusion with the most relevant ingroup – to establish which ingroup is the most relevant for the participants we conducted a repeated-measures ANOVA with ratings of group importance as the dependent variable. We also controlled for Vote.

The importance of the group for personal identity differed for each group category (H-F  $F(2.99, 2084.24) = 139, p < .001, \eta^2_G = 0.08$ ). The British target was selected as the most important ingroup most often ( $M = 3.63, SD = 1.81$ ) and the Europeans target was selected as the second most important one ( $M = 3.09, SD = 1.73$ ). Remain voters and Leave voters did not differ in their ratings of British as important ingroup (M Difference = 0.39,  $p = .113$ ). However, Remain voters ( $M = 3.85, SD = 1.74$ ), but not Leave voters ( $M = 2.46, SD = 1.46$ ) also judged Europeans as a particularly important ingroup. Descriptive results are provided in Table S6 in the supplementary material.

To verify whether identity fusion with the UK target at Time 4 was associated with affective response (H2.B.), deliberative reflection and perceived sharedness (H2.C.) we conducted a two-stage multiple linear regression with identity fusion as a dependent variable and (1st stage) Voting choice and T4 positive/negative affect scores added, followed by (2<sup>nd</sup> stage) T4 deliberative/intrusive reflection, and perceived sharedness of experience with other British people as predictors. To compare identity fusion with group identification (H2.D.), we conducted an analogous analysis with the British group identification measure as a dependent variable. VIF levels indicated collinearity in the models was not an issue (all VIF < 3).

In the first stage, the three predictors all contributed significantly to predicting fusion levels with the British target ( $F(3,697) = 27.61, p < .001, R^2 = .11$ ). Negative affect displayed a negative relationship ( $\beta = -.21, p < .001$ ). Positive affect ( $\beta = .10, p = .010$ ) and voting ( $\beta = .25, p = .004$ ) variables were not associated significantly with the fusion. In the second stage model ( $F(6,700) = 20.13, p < .001, R^2 = .14$ ), relationships were consistent with negative affect continuing to display a negative relationship ( $\beta = -.17, p < .001$ ). From the added predictors, perceived sharedness of experience with other British people displayed a positive relationship ( $\beta = .21, p < .001$ ), while neither reflection measure displayed a significant relationship (Intrusive reflection,  $\beta = -.11, p = .08$ ; Deliberative reflection,  $\beta = .05, p = .45$ ).

For H2.B, we found support for a relationship between fusion, and negative affect. Regarding H2.C, we found the anticipated relationship with perceived sharedness of experience but no relationship for deliberative reflection.

Examining the same two stage model applied to group identification with the UK (Stage 1:  $F(3,697) = 43.49, p < .001, R^2 = .16$ , Stage 2: ( $F(6,694) = 35.21, p < .001, R^2 = .23$ ), we found both positive ( $\beta = .16, p < .001$ ), and negative affect ( $\beta = -.20, p < .001$ ), as significant contributors. When the additional predictors were added, both positive ( $\beta = .16, p < .001$ ) and negative affect ( $\beta = -.20, p < .001$ ) remained significant. Intuitive ( $\beta = -.05, p = .34$ ) and Deliberative reflection ( $\beta = -.01, p = .82$ ), demonstrated no significant relationship whereas there was a robust relationship with perceived shared experience ( $\beta = .29, p < .001$ ). This contrasted with predictions from H2.D, with variables displaying stronger relationships and more variation being accounted for with the UK target identification measure over the matched fusion score.

### 3.3. Identity Fusion and its' Effects on Pro-Group Outcomes

To verify whether identity fusion with relevant ingroup targets was associated with pro-group sacrifice and ingroup favouritism (H3.A.) we first conducted a simple linear regression with the pro-group sacrifice measure as the outcome and identity fusion and group identification with Britons and with Europe entered as predictors. These group identities were the most important for personal identity (Table S6) and they were the most important in the context of the following analyses, which included donations to UK- and Europe-based foundations. The model was significant:  $F(4,693) = 4.42, p = .002, R^2 = .02$ , but the predictors did not meet the significance criteria.

To test associations with ingroup favouritism we examined donations allocated to 1) The British Academy and 2) The European Research Council. For the British Academy donation model the overall model was significant,  $F(4,700) = 56.53, p < .001, R^2 = .25$ . However, identity fusion scores with both the UK ( $\beta = .05, p = .33$ ) and Europe ( $\beta = -.07, p = .17$ ), were not significant predictors. Identification with the UK displayed a positive association ( $\beta = .26, p < .001$ ) and identification with Europe a negative association, ( $\beta = -.40, p < .001$ ),

To verify whether identity fusion with partisan ingroup targets was associated with parochial altruism and political polarization (H3.B.) we composed two new variables. The parochial altruism score was based on the difference between UK-oriented donations and Europe-oriented donations. The political polarization score was based on the difference between identity fusion between Leavers and Remainers at Time 2 (before Brexit). The higher the score, the greater parochial altruism, or the

greater political polarization. We conducted two multiple linear regressions with parochial altruism and political polarisation scores as dependent variables. In both models, we included identity fusion with Leavers and Remainers at Time 4, group identification with Leavers and Remainers at Time 4 (H3.C.) and Vote as predictors.

The parochial altruism model was significant ( $F(5, 696) = 52.4, p < .001, R^2 = .27$ ). People who identified with Remainers had lower parochial altruism scores ( $\beta = -.18, p < .001$ ) and people who identified with Leavers had higher parochial altruism scores ( $\beta = .18, p < .002$ ). Contrary to our expectations, the association between identity fusion and parochial altruism was not significant (with Remainers  $p = .919$ ; with Leavers  $p = .038$ ). Voting behaviour also did not significantly predict parochial altruism ( $p = .009$ ).

The political polarization model was significant ( $F(5, 694) = 28.4, p < .001, R^2 = .17$ ). People who were fused with Remainers ( $\beta = .42, p < .001$ ) as well as people who were fused with Leavers ( $\beta = .27, p < .001$ ) had higher political polarization scores. Also, those who voted Remain had significantly higher political polarization scores ( $\beta = .38, p < .001$ ). Group identification measures were not associated with polarization (with Remainers  $p = .015$ ; with Leavers  $p = .540$ ), which supported our hypothesis (H3.C.).

## 4. Discussion

We have examined how two cross-cutting imagistic events, Brexit, and the COVID-19 lockdown, impacted identity fusion. Previous research had suggested the Brexit referendum outcome initially served as an imagistic experience for Remainers, fusing them to each other (Muzzolini et al., 2022). Since the lockdown also likely involved shared transformative experiences, we hypothesized that people would experience both Brexit and the lockdown as imagistic events. As such, we also predicted that both events would increase identity fusion within the groups perceived as sharing these imagistic experiences. In addition, we hypothesized that those who were more fused with their groups would more strongly endorse pro-group behaviours. We were also interested in understanding how these two significant events might have influenced the bonds among Britons.

### 4.1. Brexit and National Lockdown as Imagistic Events

We found overall support for the hypothesis that the implementation of Brexit and the lockdown served as imagistic events. However, they did so in different ways. Shifts in affect occasioned by the official withdrawal from the EU were conditioned by whether the participant was in favour or opposed to Brexit. Both Remainers and Leavers experienced a decrease in positive affect immediately after the official Brexit withdrawal, with Leavers experiencing a smaller decrease. Additionally, negative affect decreased for Leavers and increased for Remainers.

Imagistic experiences drive fusion not only because they are group defining but also because they involve “transformative” qualities that are felt to be personally defining. It is the combination of transformativeness and sharedness that serves to fuse personal and group identities together. Regarding the transformative nature of Brexit, 42% of people declared that overall Brexit was at least a somewhat transformative event. In the case of the lockdown, 60% of people indicated that this was at least a somewhat transformative event. Only 28% of participants indicated that Brexit left them with flashbulb-like memories while 89% of our participants reported flashbulb-like memories associated with the lockdown. These findings suggest that both events induced affective responses, generated flashbulb memories for some, and were regarded as transformative experiences.

Considering Brexit, those who supported it experienced less negative affect after the withdrawal, and those who opposed it experienced higher levels of negative affect. However, Leavers also displayed a slight decrease in positive affect following the UK leaving the European Union. Speculatively, this could be because the negotiated terms of the 2020 Brexit withdrawal were felt to be less attractive than the deal promised by Leave campaigners in the build up to the 2016 Referendum.

In fact, Drinkwater and Jennings (2022) found that individuals who voted Leave in the referendum were significantly more inclined to indicate that they would have voted Remain if given the opportunity.

The affective response remained unchanged after the implementation of the lockdown. One explanation for this finding is that the Brexit withdrawal had already induced significant affective changes among the British population, and the subsequent COVID-19 lockdown measures primarily impeded the return of positive and negative affect to previous baseline levels. However, despite the relative lack of affective change, it seems that the pandemic national lockdown did produce further psychological consequences, as indicated by the higher reported levels of transformativeness and the presence of flashbulb-like memories associated with the lockdown events.

#### **4.2. The Role of Brexit and the Pandemic Lockdown in Shaping Identity Fusion**

Our results suggest that Brexit and the pandemic lockdown impacted identity fusion in different ways. We observed a decrease in fusion among Remainers with other Remainers, whereas the fusion among Leavers with other Leavers remained unchanged. Furthermore, we noted a decline in participants' identity fusion with other British individuals. Overall, Leavers exhibited a higher level of fusion with the British, whereas Remainers exhibited stronger fusion with Europe compared to Leavers. However, it is worth noting that British identity was the most important for both Remainers and Leavers. Participants who reported higher fusion with the UK experienced lower levels of negative affect following the lockdown and reported a greater number of shared experiences with other British individuals.

There is evidence that when groups experience painful defeats, this can increase levels of fusion – for example among football fans whose chances of winning on the field have been thwarted (Newson et al., 2023). However, national events that celebrate or implement the successes of an outgroup likely have the opposite effect, as Kapitány and colleagues (2020) found in their study on the Presidential Inauguration of Donald Trump, which was associated with a decrease in identity fusion among supporters of Hilary Clinton. They suggested that this phenomenon might align with theories of "cutting off reflected value" (Cialdini et al., 1976), which suggest that individuals employ image-maintenance tactics that involve distancing oneself from an unsuccessful group. It is possible that Remainers attempted to distance themselves from their defeated group, resulting in a decrease in identity fusion. Interestingly, we found a decrease in identity fusion with the British among our participants after the lockdown as well.

Echoing the findings of Kapitány and colleagues (2020), who observed no change in identity fusion among Trump supporters, we also found that identity fusion did not change among Leavers, who were considered the "winners" in the Brexit Referendum. It remains uncertain whether the official withdrawal was an insufficient event to increase identity fusion among the winners or whether identity fusion levels had already been elevated following the outcome of the Referendum and subsequent Brexit events did not dramatically alter subsequent fusion levels.

Contrary to our initial hypothesis, we found that markers of imagistic experience were more strongly associated with group identification with the British rather than fusion with the British. A potential explanation of this effect was presented by Kavanagh and colleagues in their study on identity fusion among Indonesian Muslims (2020). They argued that when an imagistic event is accompanied by an established narrative, it may hinder its ability to serve as a catalyst for personal reflection and the generation of relational bonds, which are crucial for identity fusion processes. The extensive media coverage of Brexit and the lockdown limited individuals' opportunities to develop their own personally relevant meanings and symbolism associated with these events and the groups they belonged to. This kind of doctrinal narrative surrounding the events could be linked to the events' ability to generate group identification rather than fusion.

#### **4.3. Identity Fusion and Pro-Group Behaviour**

In the charitable donation scenario, stronger identification with the UK and Europe were more strongly associated with donating more to, respectively, British, and European charities. However, fusion measures did not show the same relationship. Our study found no evidence supporting the idea that strong fusion with one's primary group leads to sacrificing for the group or favouring it. Brexit may have influenced this discrepancy by polarizing perceptions of national and regional identities, reducing the impact of fusion and pro-group behaviour.

Identity fusion with either Remainers or Leavers was linked to increased group polarization, with individuals more fused with either Leavers or Remainers exhibiting higher levels of polarization. While previous research has established a connection between higher levels of polarization and stronger group identification (Westfall et al., 2015), our study is the first to demonstrate that identity fusion with the in-group also contributes to political polarization. This finding expands the existing literature on the effects of identity fusion, highlighting its impact not only on in-group dynamics but also on interactions with outgroups, such as maximizing in-group advantage over the outgroup

(Buhrmester, Newson, et al., 2018) or a desire for retaliation following a threat to the in-group (Fredman et al., 2017).

#### **4.4. The Effects of Experiencing Subsequent Cross-cutting Imagistic Events on Identity Fusion**

The imposition of the COVID-19 lockdown during our longitudinal study allowed us to observe how group bonding processes change when people experience an imagistic event that divides them, and then one that affects both groups similarly and has the potential to rebuild a shared group identity. People did not decrease or increase their identity fusion with any target except *other Europeans*. We observed that fusion between Britons and other Europeans decreased right after Brexit. However, after the government introduced a national lockdown, Britons restored their initial levels of fusion with other Europeans. The divisions set by Brexit did not bridge the divide and did not increase the feelings of oneness with other Britons. It did, however, rebuilt the bond with other Europeans.

It is possible that the introduction of the lockdown had no impact on their British identity, perhaps because, at the onset of the pandemic, the British may have been exposed to non-British pandemic-related issues in the media, such as the first case of COVID-19 in Europe occurring in France or the dire situation in Italy. These events and their media coverage may have led many Britons to perceive the pandemic as a threat to a broader portion of humanity, not just to the British. This would be in line with previous research demonstrating the role of shared transformative experiences in groups transcending national boundaries, such as transnational religions (Kavanagh et al., 2020), or even in fostering fusion across the species barrier (Buhrmester, Burnham, et al., 2018).

It is also possible that the polarization occasioned by Brexit made it difficult for the British to increase identity fusion with their own nation.

Our research indicates that divisive events can create lasting societal fractures, while unifying events may rebuild connections with broader political entities. In the UK, Brexit (divisive) and the COVID-19 lockdown (unifying) exemplify how these events influence social dynamics. Divisive events, like riots, protests or political upheavals, may deepen societal splits, while unifying events, such as national crises, can foster collective bonding. Recent UK examples include anti-immigration riots and the general election (divisive), contrasted with the death of Queen Elizabeth II and the Russian invasion of Ukraine (unifying). While divisive events can damage pro-social behaviors, preceding unifying events may buffer against societal divisions. These insights, though requiring further research, could guide policymakers and civic organizations in promoting social cohesion.



#### 4.5. Limitations

The main limitation of our study was the unexpected disruption caused by the pandemic lockdown, which interfered with our original plan of investigating the effects of Brexit. While we adapted our study to include the lockdown and even preregistered additional hypotheses, we cannot be certain that the consequences of the Brexit event alone would have been the same for identity fusion and pro-group behaviour, had the lockdown not occurred. As demonstrated by Kapitány and colleagues (2020), imagistic events can elicit psychological and social effects that may unfold over time. However, the pandemic lockdown partially disrupted this potential developmental process regarding the salience of Brexit events. Naturally, it was impossible to predict the lockdown or to wait for another Brexit event to occur to study it under more controlled conditions.

Another limitation of this study is the possibility that psychological effects observed in this study were influenced by some other confound events. While we implemented strategies to mitigate this concern, such as adjusting the timing of data collection waves to avoid proximity to potentially confounding events (e.g., scheduling the second wave a week before the December general election), the dynamic nature of real-world settings makes it impossible to completely eliminate temporal influences. This challenge is particularly serious in studies conducted without a preconceived plan. If we had conducted 4 waves of data collection and then looked for events that would help explain the observed dynamics, we would have increased the chance of making a Type I error - we might have found events that fit the observed data. In our study, however, we first explicitly declared what events we were interested in, then collected the data, and finally interpreted it. This approach minimized the risk of attributing erroneous psychological consequences to specific events.

Our results provide a snapshot of a specific moment in time, capturing psychological responses to Brexit and the COVID-19 lockdown as they unfolded. However, we cannot infer the current state of British identity based on this study, as numerous transformative events have occurred since—such as anti-immigration riots, the death of Queen Elizabeth II, and the Russian invasion of Ukraine—all of which may have further shaped national identity. Additionally, the stability of the observed effects remains uncertain. Our study included a four-month gap between the lockdown and the final wave of data collection, and while the findings highlight significant shifts in identity and group alignment, they should not be extrapolated beyond this timeframe.

#### 4.6. Conclusion

Our study presents evidence that both Brexit and the pandemic lockdown functioned as imagistic events, activating psychological mechanisms that foster pro-group outcomes. Both Brexit and the COVID-19 lockdown were emotionally impactful events that significantly influenced identities. Stronger extended fusion with in-groups (whether Remainers or Leavers) was associated with heightened polarization, irrespective of group identification. This is the first ever study to show the impact of sequential imagistic events on group allegiance: Brexit appears to have partially reduced fusion with other Europeans, while the lockdown was associated with increased fusion with Europeans, possibly due to a perceived global nature of the pandemic. However, Brexit's polarizing effects may have hindered some Britons from reconnecting with their national identity. Overall, our project emphasizes the influence of large-scale political events on intergroup dynamics and shows how imagistic events can affect political polarization.

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## Supplementary Material

### Changes to the Pre-Registered Plan

- The original focus came about by accident. Initially, we wanted to build on previous research on Brexit as an imagistic experience. As such, we preregistered a longitudinal study to examine psychological and behavioural changes in supporters and opponents of Brexit, focusing on the effects on social bonding and pro-group sacrifice. However, the unforeseen COVID-19 lockdown disrupted our research plans. Considering the lockdown as another rare and potentially imagistic event, we modified our study to incorporate both Brexit and the announcement of the national lockdown, to explore the effects of both events on the same outcome measures.
- In our pre-registration we declared that we will test hypotheses using *the Imagistic Index* – a composite measure constructed from other measures used to assess the imagistic characteristics of Brexit and the lockdown. This Index was our attempt to develop a new measure for capturing imagistic phenomena. Unfortunately, our analyses showed its inadequacy for this purpose. To fit the journals' word limitations, we decided to move the analyses and results to the Supplement.
- At Time 3, we asked participants for a free recall of the Brexit experience. At Times 1-4 we asked the participants to rate how their identity changed because of Brexit and at Times 2-3 we asked about their identity fusion and identification with the county they live in. We planned to use these measures for exploratory analyses, but due to the length of the paper, the focus in this paper is only on confirmatory tests of our preregistered hypotheses.
- Due to time limitations we asked only two items that related to flashbulb like memories in regard to the national lockdown. In our preregistration, we indicated that we would also measure the vividness of the memories and use a seven-item questionnaire to measure flashbulb memories regarding the lockdown. However, during piloting (but after the pre-registration) we grew concerned that the questionnaire was too long for participants and so

we reduced the measures to the two reported. This change did not affect the stated hypotheses.

- To fit the word limits of the journal we decided to withdraw information on exploratory variables that were not necessary to test our hypotheses – measures targeting Boris Johnson (identity fusion, group identification) and Covid-19 experiences.
- Due to word limitation, we did not describe two additional single item measures at T3 and T4 that addressed identity transformation related to the official Brexit withdrawal event across three targets. Specifically, the T3 measure asked participants: *To what extent do you think that the UK withdrawal on January 31<sup>st</sup> has shaped... 1) Your personal identity, 2) Your identity as a British citizen, 3) Your identity as a European citizen.* Similarly, the T4 item asked: *To what extent has the official withdrawal shaped your identity across the following domains?* With the same three target groups provided. Responses were recorded at both times on a 7-point scale of 1- *not at all* to 7- *very much*. Responses to this item are reported below, but in our analyses, the 4-item transformativeness scale is preferred since it consists of four psychometrically validated items and is available for both pandemic and Brexit targets.

On the three single items on identity change measured at Time 4 that focused explicitly on the official withdrawal, using the same brackets as above, we found that while only 15.4% reported the withdrawal as highly transformative (5-8) for their personal identity, much larger proportions found it highly transformative of their British (38.5%) and (40.7%) European identities.

- In our initial pre-registration, we stated that we would use the MTurk and TurkPrime platforms for data collection. We began the process using MTurk, but encountered difficulties in recruiting respondents, with only 82 people completing the survey. Due to these challenges, we made the decision to switch to the Prolific platform. It was through Prolific that we successfully completed the subsequent waves of the survey.

### ***Description, the Analyses and Results Regarding our Attempt to Create the Imagistic Index***

- H2.B. Imagistic indexes will be positively associated with changes in identity fusion with relevant in-groups between Time 2 and Time 4.

**Imagistic Indexes.** Given that imagistic experiences are created by a variety of factors we attempted to construct a combined imagistic index score for both Brexit and pandemic lockdown events. We created the composite score by taking affective measures of change (from T2 to T3 for

Brexit and from T3 to T4 for the Lockdown respectively), identity transformativeness, and flashbulb memories. We used the mean for Brexit and Lockdown Transformativeness (scores 1-7), and the mean for Brexit and Lockdown flashbulb memories (scores 1-7). For affective change, we took absolute values for differences in positive and negative affect — T3-T2 for Brexit, and T4-T3 for the Lockdown (min value = 0, max value = 6). We increased the result by 1 to recode it into a 1–7-point scale, to reflect the scales used by other two measures. The scales for both the Brexit and the Lockdown Imagistic Indexes were the result of averaging these three variables (possible scores: 1-7). The descriptive statistics for the indexes are presented in Table S1.

**Table S1**

*Descriptive Statistics for the Brexit Imagistic Index and the Lockdown Imagistic Index*

Imagistic index	Mean	SD	Skewness
Brexit	2.20	0.95	0.77
Lockdown	3.16	0.91	-0.04

**Imagistic Indexes Statistical Analyses.** To test our hypothesis and to verify whether changes in identity fusion with the most important ingroup, the British, are predicted by Brexit and Pandemic Imagistic Indexes we conducted a repeated-measures ANOVA with identity fusion with Britons (T1-T4) as a dependent variable, and Vote as well as Imagistic Indexes as covariates. The results did not support the hypothesis as neither the Brexit Imagistic Index ( $p = .478$ ) or the Lockdown Imagistic Index ( $p = .804$ ) were associated with changes in identity fusion with the relevant group.



## **Brexit and the Lockdown – social context**

In this study, we conceptualized Brexit and the COVID-19 lockdown as key events, though we recognize they are not confined to single moments in time. Both events have clear dates, but each respondent likely experienced these events in their own personal context, shaped by a range of individual circumstances. While these events are ongoing and multifaceted, their initial phases triggered significant collective and individual experiences, making them relevant to our investigation of fusion and social identity dynamics. ***Brexit***

On 31 January 2020, the UK officially left the European Union (EU) following a nationwide Referendum in 2016, where 51.89% of voters supported leaving the EU. Brexit was fuelled by concerns about British independence, sovereignty, and immigration control (Ashcroft, 2019; Goodwin & Milazzo, 2017). For Leavers, it represented the promised culmination of their political campaign, while Remain supporters feared it would have damaging effects on the UK's reputation and lead to severe economic damage (Dhingra et al., 2016). Recent research reported that Remainers who experienced the Brexit referendum as more transformative of their identity and perceived such experiences to be shared with other Remainers displayed higher levels of identity fusion but not group identification (Muzzulini et al., 2022). The study also reported that participants with more visceral flashbulb-like memories of the referendum were subsequently more likely to engage in intentional reflection and meaning-making about the event, leading to a greater sense of transformation.

### ***National Lockdown***

The national lockdown implemented in the UK on 23 March 2020 in response to the COVID-19 outbreak significantly disrupted the lives of British citizens. The lockdown aimed to minimize mortality and relieve strain on the healthcare system by imposing restrictions on physical contact and movement on UK residents. Its impact on individuals' lives and the shared experience of the crisis could serve as a source to increase identity fusion with relevant groups (Gómez, 2020) and recent studies have shown that during the pandemic higher levels of identity fusion with one's country were associated with less panic buying in Taiwan (Seih et al., 2021) and the perception of greater adherence to health measures in Spain (Lobato & Sainz, 2021). Given the powerful consequences of the pandemic and the uncertain nature of the early outbreak period, it is plausible that the national lockdown event could function as a powerful imagistic event.

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**Table S2***The Instructions and Items Used in the Study to Assess the Intention for Pro-group Sacrifice*


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The UK is soon hit by a second wave of COVID-19: This might put the lives of other <insert ingroup> and their families at high risk. Knowing that in the midst of a second wave the actions listed below would certainly save the lives of other <insert ingroup> and their families, to what extent would you be prepared to accept the following?

---

1. ...I would get furloughed
  2. ...I would accept school closure until the end of the year
  3. ...I would sacrifice part of my salary
  4. ...I would commit to more strict social distancing measures
  5. ...I would give up attending the funeral of a dear one
  6. ...I would accept another lockdown
  7. ...I would give up hugging my family members
  8. ...I would avoid travelling even if I could
- 

Note. The participants used a 7-point Likert scale (1 – completely disagree; 7 – completely agree)

**Sensitivity analysis**

Based on the previous longitudinal research conducted on identity fusion (Kapitány, et al., 2020), we were interested in detecting small effects. Using G\*Power software (Faul, et al., 2007), we performed a sensitivity analysis, to verify the smallest effect size we were able to observe with repeated measure ANOVA for two groups (Remainers and Leavers) and four measurement points (four waves in our longitudinal study). Both of these variables were treated as factors. We found that using an alpha level of 0.05 and 80% power we were able to detect satisfyingly small effect sizes of  $f = 0.12$  (or  $\eta^2_G = 0.014$ ) and critical  $F = 2.61$ .

## **Sample characteristics and the analyses on the differences between participants that did and did not complete all of the four measurements.**

### ***Additional characteristics of the final sample***

Ethnically, 641 participants identified themselves as White British. 650 participants identified their nationality as British, 43 as English, 4 as Welsh, and 1 as Northern Irish. Five people declared a national identity not associated with the United Kingdom.

The Leavers (age  $M = 43.6$ ,  $SD = 12.5$ ) were older than Remainers (age  $M = 39.2$ ,  $SD = 12.7$ ):  $t(701) = -4.57$ ,  $p < .001$ ,  $d = -0.35$ . There were no differences between these groups regarding gender distributions.

In relation to pandemic experiences, 8.96% of the participants were diagnosed or believed they had COVID-19 (7.11% were not sure), 18.78% of participants had a close person that went through COVID-19 (5.26% were not sure) and 1 person was hospitalized due to the illness.

### ***Differences between participants that did not complete all of the four measurements***

For the first wave of data collection, we recruited 1207 participants, of whom 1103 completed all measures in the study. In the second wave, we recruited 1115 participants, with 970 completing all measures. In the third wave, we recruited 1052 participants, and 912 completed the questionnaire. For the final wave of data collection, we decided to contact only the 869 participants who had taken part in each of the previous waves, and 795 of these participants took part in the study.

We compared the responses (T1 – T3) of the participants who completed all of the four measurements (Included set  $n = 703$ ) with the group that completed the measurements at T1 (Excluded set  $n = 400$ ), T2 (Excluded set  $n = 267$ ), and T3 (Excluded set  $n = 208$ ), but failed to complete the fourth measurement. We compared the groups regarding their demographics, identity fusion, group identification and affective response. Important note: because of the number of comparisons in the study, we decreased the alpha level to  $p < .001$ .

We found no differences regarding gender (Included: women  $n = 424$ , men  $n = 273$ , others  $n = 6$ ; Excluded: women  $n = 244$ , men  $n = 154$ , others  $n = 2$ ):  $\chi^2(2) = 0.47$ ,  $p = .792$ . There were no differences regarding self-identified ethnic identity:  $\chi^2(1) = 1.10$ ,  $p = .294$ . Included set consisted of 91.2% White British and 8.8% Others; Excluded set consisted of 89.3% White British and 10.7% Others. There were no differences regarding national identity:  $\chi^2(5) = 15.1$ ,  $p = .010$ . Included set

consisted of 650 participants who self-identified as British, 43 as English, 4 as Welsh, 1 as Northern Irish, and 5 as Other. Among the Excluded, 374 participants self-identified as British, 11 as English, 5 as Welsh, 2 as Scottish, and 8 as Other. The Excluded set had a subsample of 41 participants who abstained from voting, whereas Included set had none. Regarding the composition of Leavers and Remainers, there were no differences between the Excluded (Remainers – 52.1%; Leavers – 47.9%) and Included (Remainers – 44.8%; Leavers – 55.2%) sets:  $\chi^2(1) = 5.05, p = .025$ . We found that the participants from the Included group ( $M = 41.6, SD = 12.7$ ), compared to Excluded group ( $M = 36.0, SD = 11.7$ ) were older: Welch's  $t(886) = -7.46, p < .001, d = -.46$ .

We also compared the groups in regard to their scores of identity fusion and group identification (Table S3), but we found no significant differences between the groups.

**Table S3***The Results of Independent Samples Welch's T-test for the Differences Between the Excluded and Included Sets Regarding Identity Fusion and Group Identification*

Time	Target	Identity fusion				Group identification			
		Included M (SD)	Excluded M (SD)	t	p	Included M (SD)	Excluded M (SD)	t	p
1	Family	70.5 (38.6)	68.1 (38.7)	-1.0	.318	6.04 (1.50)	6.00 (1.53)	-0.45	0.654
	Remainers	42.8 (41.6)	48.3 (42.0)	2.11	.035	4.00 (2.04)	4.32 (1.96)	2.58	0.010
	Leavers	37.6 (41.8)	32.4 (40.4)	-2.02	.044	3.85 (2.12)	3.56 (2.11)	-2.18	0.029
	Britons	60.6 (38.9)	56.8 (38.5)	-1.55	.121	5.18 (1.43)	5.09 (1.37)	-1.03	0.304
	Europe	36.1 (36.1)	38.1 (38.1)	0.86	.390	3.97 (1.67)	4.08 (1.64)	1.11	0.270
	B. Johnson	20.9 (33.7)	16.6 (30.5)	-2.17	.031	2.83 (1.93)	2.60 (1.78)	-2.02	0.044
2	Family	68.6 (38.9)	71.7 (38.1)	1.11	.267	5.91 (1.58)	6.04 (1.52)	1.17	0.241
	Remainers	41.0 (41.1)	47.4 (41.4)	-0.10	.918	4.06 (2.16)	4.51 (2.05)	2.98	0.003
	Leavers	36.7 (41.1)	30.6 (39.4)	1.51	.132	3.88 (2.23)	3.42 (2.10)	-2.99	0.003
	Britons	59.2 (38.8)	58.9 (37.8)	-2.10	.036	5.31 (1.41)	5.33 (1.36)	0.24	0.814
	Europe	40.4 (37.4)	44.7 (39.9)	2.13	.033	4.36 (1.67)	4.50 (1.67)	1.16	0.247
	B. Johnson	18.4 (31.6)	15.4 (29.7)	-1.38	.170	2.83 (1.99)	2.61 (1.86)	-1.64	0.102
3	Family	70.3 (39.4)	68.6 (40.9)	-0.54	.588	5.91 (1.56)	5.77 (1.82)	-1.01	0.316
	Remainers	41.2 (41.6)	46.1 (40.8)	1.51	.131	4.07 (2.09)	4.48 (1.95)	2.66	0.008
	Leavers	35.1 (40.7)	29.7 (39.7)	-1.71	.088	3.90 (2.20)	3.43 (2.13)	-2.78	0.006
	Britons	56.4 (39.6)	53.6 (39.6)	-0.92	.361	5.33 (1.42)	5.17 (1.44)	-1.46	0.147
	Europe	41.8 (38.6)	44.6 (39.4)	0.92	.359	4.36 (1.71)	4.54 (1.59)	1.37	0.171
	B. Johnson	20.0 (33.5)	15.7 (28.8)	-1.83	.068	2.92 (2.02)	2.64 (1.85)	-1.87	0.063

## BONDING THROUGH ADVERSITY

We also compared the groups regarding their affective response (Table S4) and we found that people who were excluded from the study declared higher levels of negative affect at Time 2 ( $d = .28$ ) and Time 3 ( $d = .26$ ).

**Table S4**

*The Results of Independent Samples Welch's T-test for the Differences between the Excluded and Included Sets Regarding Positive and Negative Affect (PANAS)*

Time	Positive affect				Negative affect M (SD)			
	Included M (SD)	Excluded M (SD)	t	p	Included M (SD)	Excluded M (SD)	t	p
1	4.55 (1.14)	4.41 (1.15)	-1.92	0.055	2.60 (1.31)	2.85 (1.35)	2.91	0.004
2	4.54 (1.15)	4.41 (1.26)	-1.49	0.138	2.52 (1.30)	2.89 (1.42)	3.75	< .001
3	3.69 (1.49)	3.60 (1.33)	-0.84	0.404	2.62 (1.63)	3.04 (1.61)	3.35	< .001

### Instruction for the Measure of Pro-Group Donation

The instructions were as follows: You received news that your recently deceased relative, who was an extremely successful investor, has left instructions in their will for you to receive a substantial inheritance. The only condition is that they also want you to oversee the distribution of their life savings (amounting to approx. £100 million) to a charitable cause of your choice. Due to the effect of the pandemic, you have decided to donate the entire amount to conduct research into the virus and how to combat it. There are a number of organisations that you could donate to. Please drag the bars to indicate from the choices of organisations below how you would allocate the £100 million. Please note that you may split the sum however you want!

- (1) The British Academy (BA) to fund research on COVID-19 in the UK.
- (2) The European Research Council (ERC) to fund research on COVID-19 in Europe
- (3) The World Health Organization (WHO) to fund research on COVID-19 around the world.

**Table S5***Descriptive Statistics for Identity Fusion with Various Target Groups Among Remainers and Leavers*

Vote	Wave	Identity Fusion <i>M</i> ( <i>SD</i> )					
		Family	Remainers	Leavers	UK	Europe	B. Johnson
Remain	1	66.91 (38.8)	68.61 (37.6)	9.24 (21.5)	52.17 (38.2)	54.11 (35.7)	7.29 (22.2)
	2	66.14 (38.6)	66.56 (37.4)	8.83 (20.59)	50.24 (37.9)	58.49 (35.8)	5.56 (17.9)
	3	68.66 (38.3)	66.15 (39.0)	7.81 (19.9)	48.65 (38.4)	58.39 (38.5)	6.46 (20.8)
	4	67.10 (38.4)	60.94 (38.2)	8.18 (21.2)	43.44 (37.1)	51.04 (36.5)	6.67 (19.2)
Leave	1	73.45 (38.2)	21.91 (31.7)	60.51 (40.2)	67.36 (38.1)	21.54 (29.1)	31.88 (37.3)
	2	70.69 (39.1)	20.27 (31.1)	59.30 (39.6)	66.48 (38.1)	25.72 (31.8)	28.88 (36.1)
	3	71.66 (40.2)	20.90 (31.3)	57.29 (39.8)	62.77 (39.5)	28.30 (33.1)	31.00 (37.6)
	4	74.69 (37.4)	20.85 (29.7)	55.43 (39.0)	63.13 (38.9)	24.23 (31.1)	27.08 (35.8)

*Note.* Identity fusion with Boris Johnson was associated only with Voting (H-F  $F(1, 698) = 133, p < .001, \eta^2_G = 0.13$ ), with Leave voters were more fused with Boris Johnson than Remain voters (M Difference = 23.2,  $p < .001$ ). This part of analyses was withdrawn from the main text as the variable measuring fusion with B. Johnson was only exploratory.

**Table S6***Descriptive Statistics for the Importance of the Group for Personal Identity*

	Remainers	Leavers	Britons	Europe	B. Johnson
M	2.77	2.75	3.63	3.09	2.16
SD	1.84	1.87	1.81	1.73	1.63