

Minimal conditions for the creation of a unit relationship: the social bond between birthdaymates

DALE T. MILLER*, JULIE S. DOWNS
and DEBORAH A. PRENTICE

*Department of Psychology, Princeton
University, U.S.A.*

Abstract

We hypothesize that sharing a birthday is sufficient to create a unit relationship. Two studies demonstrated that individuals cooperated more in a prisoners dilemma game when their (fictitious) opponent shared their birthday. They also reacted more negatively to betrayal and were less sensitive to relative gains for self versus other.

© 1998 John Wiley & Sons, Ltd.

INTRODUCTION

The idea that objects or individuals sharing an attribute tend to be grouped and perceived as a unit is one of the oldest in psychology. Early associationist theories (Robinson, 1932; Shepard & Fogelsonger, 1913) and gestalt theories (Koffka, 1935; Kohler, 1929) both emphasized the powerful cognitive-perceptual tendency to group objects or people by similarity. Koffka (1935), an influential gestalt theorist spoke of there being a '... stress towards group formation which arises from mere similarity' (p. 661), and Fritz Heider (1958), the social psychologist most influenced by the gestalt and associationist traditions, coined the term unit relation to refer to the connection that exists between people who are 'perceived as belonging together in a specifically close way' (p. 201). The present research attempts to demonstrate just how minimal a degree of similarity between two people is necessary for them to have a sense of 'belonging together'. The source of similarity we chose was a shared birthday. The present research used the Prisoner's Dilemma paradigm (Rapport & Chammah,

*Address for correspondence: Dale Miller, Department of Psychology, Princeton University, Green Hall, Princeton University, Princeton, NJ 08544-1010, U.S.A.

Contract grant sponsor: National Institute of Mental Health
Contract grant number: MH 44069

1965) to examine the hypothesis that sharing a birthday—a seemingly superficial and non-diagnostic commonality—is sufficient to create a social bond between people (Brown, Novick, Lord, & Richards, 1992; Finch & Cialdini, 1989).

EXPERIMENT 1

Our first experiment tested the hypothesis that individuals would play more cooperatively in the PD when their opponent was alleged to share their birthday than when their opponent was alleged to have a different birthday. We also expected the bond created by a shared birthday to lead players to react more negatively to violations of their trust by their opponent.

Method

Participants

Sixty-four female undergraduates were recruited by telephone to participate in a 'game playing experiment'. Their birthdates were identified prior to their participation from a university publication.

Design and Procedure

Although participants were run individually, they were led to believe that they were interacting with another participant. Before they began playing the game, they were asked to enter some identifying information (including their birthday) that was to be sent to the other player in an adjacent room. As they started to enter their information, the computer interrupted them with the (fictitious) other player's information. This information revealed the other player to have the same birthday as the participant's (birthday condition), or a birthday approximately 4 months earlier or 4 months later in the same year (control condition). Participants then finished entering their own information.

The game consisted of two rounds of 24 successive one-trial prisoner's dilemma games. On each trial, participants chose either action 'A' (the cooperative response) or action 'B' (the competitive response) and received no information about which action the other player chose. The exact values in the payoff matrix varied from trial to trial, and the matrices appeared in random order. At the end of the first round, participants indicated their assumptions about the other player's actions and general similarity to them, and then received the alleged results from the first round. The bogus feedback indicated that the other player had chosen action 'A' either five more times than the participant (cooperative opponent) or five fewer times than the participant (exploitative opponent).¹ Participants then played the second round of the game.

¹The cooperation rates of five participants were either too high or too low to statistically accommodate this manipulation. The feedback to these participants simply indicated that their opponent had cooperated the

Results and Discussion

First-Round Behaviour

An analysis of variance (ANOVA) on first-round cooperation rates revealed that, as hypothesized, birthday participants cooperated more often ($M = 52$ per cent of trials) than did control participants ($M = 38$ per cent of trials), $F(1,58) = 5.64$, $p < 0.05$. This difference was not due to differential perceptions of similarity, as birthday and control participants rated their opponents as equally similar to themselves ($M_s = 4.90$ and 4.53 , respectively, on a 1–7 scale. $F(1,58) = 1.94$, $p > 0.10$). Further, an analysis of covariance (ANCOVA) controlling for perceived similarity still revealed higher cooperation rates in the birthday condition ($M = 51$ per cent, adjusted) than in the control condition ($M = 38$ per cent, adjusted), $F(1,57) = 4.63$, $p < 0.05$.

Second-Round Behaviour

To examine the impact of the feedback about the other player's actions provided after the first round, we conducted a 2 (bond: birthday versus control) \times 2 (opponent's behaviour: cooperative versus exploitive) ANCOVA on cooperation rates in round 2, controlling for cooperation rates in round 1. A main effect of opponent's behaviour emerged, $F(1,55) = 10.83$, $p < 0.002$, indicating that participants who discovered that their opponents had played cooperatively in round 1 cooperated more in round 2 ($M = 47$ per cent, adjusted) than did participants who discovered that their opponents had played exploitatively ($M = 35$ per cent, adjusted). More importantly, the predicted bond \times opponent's behaviour interaction was also significant, $F(1,55) = 5.07$, $p < 0.05$. Learning of one's opponent's perfidy suppressed cooperation much more in the birthday condition ($M = 29$ per cent, adjusted) than in the control condition ($M = 42$ per cent, adjusted). Interestingly, the reverse did not hold for a cooperative opponent: learning of one's opponent's greater cooperativeness did not have a greater impact on the behaviour of birthday participants ($M_s = 49$ per cent, adjusted) than of control participants ($M = 45$ per cent, adjusted). This asymmetry is consistent with previous research showing that, in general, competition has a much greater effect than cooperation on dyad behaviour in the Prisoner's Dilemma game (e.g. Pines, 1976). The present findings suggest that this greater sensitivity to competition was especially acute among participants who believed their opponent shared their birthday. In an ANCOVA controlling for expectations, perceived similarity, and level of cooperation in the first round, both the main effect of opponent's behaviour, $F(1,54) = 10.69$, $p < 0.002$, and the bond \times opponent's behaviour interaction, $F(1,54) = 4.91$, $p < 0.05$, remained significant.

maximum (100 per cent) or the minimum (0 per cent), respectively. Specifically, the two participants in the cooperative opponent condition whose cooperation rates were over 80 per cent were told that their opponent had cooperated 100 per cent of the time, and the three participants in the exploitative partner condition whose cooperation rates were under 20 per cent were told that their opponent cooperated 0 per cent of the time. This modification meant, effectively, that the feedback manipulation was weakened for five of the participants.

EXPERIMENT 2

Experiment 2 sought to demonstrate that the social bond created by a shared birthday leads people not only to demand more of their partners but also to sacrifice more for them. Specifically, we predicted that the relative gain for self versus other built into the payoff should affect the behaviour of players less when they share a birthday than when they do not.

Method

Participants

Participants were 49 (30 male and 19 female) undergraduates recruited by a sign-up sheet to participate in a 'game playing experiment'.

Design and Procedure

The experiment employed a 2 (bond: birthday versus control) \times 3 (matrix type: favourable-to-self versus equal payoff versus favourable-to-other) design. The bond manipulation and general procedure were identical to those employed in Experiment 1. The game consisted of 28 trials of a PD-like experimental game. To vary the degree of personal versus joint gain, we devised three different types of payoff matrices. In *equal payoff* matrices, both players earned the same number of points if they both cooperated (e.g. self = 55, other = 55); in *favourable-to-self* matrices, the participant earned more points than the other players when both cooperated (e.g. self = 60, other = 50); and in *favourable-to-other* matrices, the other player earned more points than the participant when both cooperated (e.g. self = 50, other = 60). The game included 12 equal payoff matrices, eight favourable-to-self matrices, and eight favourable-to-other matrices. Participants received no feedback about their opponent's behaviour during the game.

Results and Discussion

A 2 (bond: birthday versus control) \times 3 (matrix type: favourable-to-self versus equal versus favourable-to-other) ANOVA on cooperation rates revealed a significant main effect of bond, $F(1,43) = 5.52$, $p < 0.05$. Participants who believed they shared a birthday with the other player cooperated more than did control participants across favourable-to-self ($M_s = 68$ per cent versus 53 per cent), equal ($M_s = 60$ per cent versus 44 per cent), and favourable-to-other ($M_s = 62$ per cent versus 34 per cent) matrices. The main effect of bond remained significant in an ANCOVA, controlling for participants' expectations of the other player's actions, $F(1,42) = 4.50$, $p < 0.05$.

The ANOVA also revealed a significant effect of matrix type, $F(2,86) = 10.61$, $p < 0.0001$, and a marginally significant bond \times matrix type interaction, $F(2,86) = 3.05$, $p = 0.055$. (For the focused comparison between the favourable-to-self and

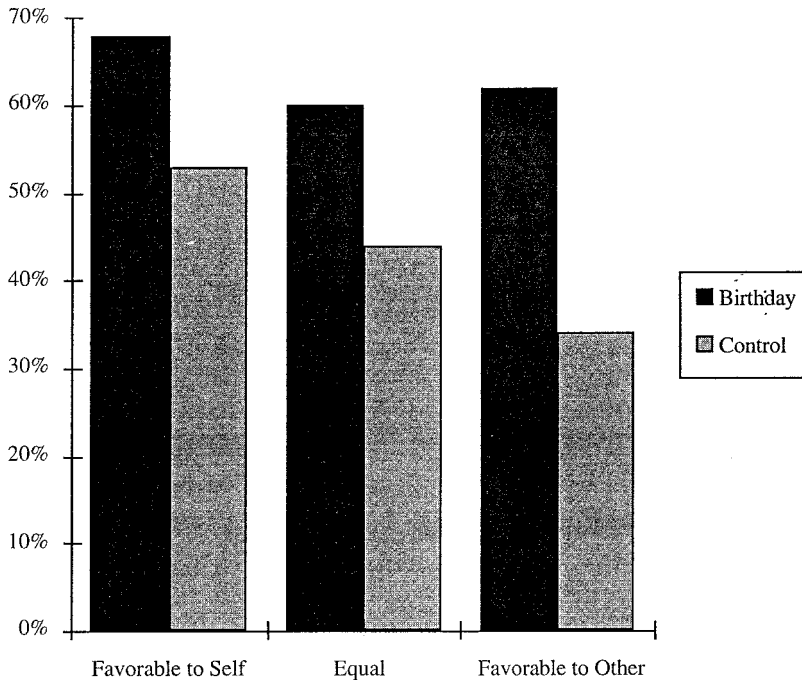


Figure 1. Mean cooperation rates by type of bond and favourability of payoff matrix to self versus other

favourable-to-other matrices, the predicted bond \times matrix type interaction was significant, $F(1,43) = 6.56, p < 0.05$). As Figure 1 shows, the prospect of a greater relative gain for one's opponent than for oneself suppressed cooperation among control participants more than among birthday participants. In an ANCOVA controlling for expectations, both the main effect of matrix, $F(1,42) = 4.57, p < 0.05$, and the interaction, $F(1,42) = 7.38, p < 0.01$, remained significant.

GENERAL DISCUSSION

The present studies suggest that a social unit can be formed between two people sharing nothing more than a common birthday. The question of why merely sharing a birthday is sufficient to induce people to act as though they 'belong together in a specifically close way' remains open. Some accounts can be ruled out, however. For example, we can state with some certainty that the feelings of closeness that arise between birthdaymates do so in the absence of any strong assumptions of general similarity. We found no differences in perceived similarity between birthday and control participants, and the effects of a shared birthday on levels of cooperation remained even when perceptions of similarity were covaried out. Moreover, the interaction effects found in the present study cannot be explained by positing differences in perceived similarity. The perception that another shared their birthday led participants not only to increase their general level of cooperation but also to react

more negatively to attempted exploitation by the other and more positively to the opportunity to benefit the other at the expense of the self. Perceived similarity alone does not seem sufficient to account for these qualitative differences between the two types of relationships. Similarity may affect behaviour in both unit and non-unit relationships but it alone does not transform the former into the latter.

The unit relationship formed between people sharing a birthday may derive solely from the sharing of a special and distinctive attribute of the self (Turnbull, Miller, & MacFarland, 1990). Our birthday, although not highly diagnostic of the kind of person we are, is both special and unique to us. As such, we feel an attachment to it and possibly, by extension, to those who share it with us.² Should we conclude, then, that a shared birthday constitutes an important or a trivial source of similarity? The answer to this question would seem to depend on which of its consequences we take as indicative of its importance. On the one hand, a shared birthday is important enough to lead individuals to react to each other as though they share a unit relationship. On the other hand, a shared birthday is not even important enough to lead individuals to infer that they share additional traits in common. In short, the attachment that one feels to one's birthdaymates typifies a kind of relation that is not well-explained by traditional notions of attribute similarity and shared category membership. The nature of this attachment and its role in interpersonal relations deserve further investigation.

ACKNOWLEDGEMENTS

This research was supported by Grant MH44069 from the National Institute of Mental Health.

REFERENCES

- Brown, J. D., Novick, N. J., Lord, K. A., & Richards, J. M. (1992). When Gulliver travels: Social context, psychological closeness, and self-appraisals. *Journal of Personality and Social Psychology*, **62**, 717–727.
- Finch, J. F., & Cialdini, R. B. (1989). Another indirect tactic of (self-) image management. Boosting. *Personality and Social Psychology Bulletin*, **15**, 222–232.
- Heider, F. (1958). *The psychology of interpersonal relations*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Koffka, K. (1935). *Principles of gestalt psychology*, New York: Harcourt Brace.
- Kohler, W. (1929). *Gestalt psychology*. New York: Liveright.
- Pines, A. (1976). The shift to competition in the Prisoner's Dilemma game. *Social Behavior and Personality*, **4**, 177–186.

²Other special and distinctive but non-diagnostic possessions of ours may function similarly. An example of such a possession is the name of our home town. People typically feel a bond with those who reside in their home town but they also may feel a bond with those who reside in other towns with the same name. Such a bond might explain the altruism shown toward the residents of Quincy, Illinois (U.S.A.) by the residents of Quincy, Massachusetts (U.S.A.) during the summer of 1993. That summer, the Mississippi river flooded for several weeks, devastating towns on either side of its banks. When residents of Quincy, Massachusetts discovered that Quincy, Illinois was one of those towns, they undertook extensive efforts to send relief supplies to the residents of their town's namesake. The bond created by sharing the name Quincy apparently was sufficient to motivate their actions of altruism.

- Rapoport, A., & Chammah, A. M. (1965). *Prisoner's dilemma*. Ann Arbor: University of Michigan.
- Robinson, E. S. (1932). *Association theory today*. New York: Liveright.
- Shepard, G. F., & Fogelsonger, H. M. (1913). Studies in association and inhibition. *Psychological Review*, **20**, 290–311.
- Turnbull, W., Miller, D. T., & McFarland, C. (1990). Distinctiveness, identity, and bonding. In J. M. Olson and M. P. Zanna (Eds), *Processes in self-perception: The Ontario Symposium* (Vol. 6, pp. 115–133), Hillsdale, NJ: Erlbaum.

Copyright of European Journal of Social Psychology is the property of John Wiley & Sons Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.

Copyright of European Journal of Social Psychology is the property of John Wiley & Sons, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.