

Is Trust Rigid or Malleable? A Laboratory Experiment

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Abstract

An important debate within the trust literature is whether trust is modified by social experiences or resistant to change despite changing social circumstances. We address this debate by designing and implementing an experiment that exposes participants to a high or low trust environment and compares their change in generalized trust. We find that the experimental condition influences change in generalized trust, particularly for participants whose prior level of trust was mismatched with their experimental condition. The implications of these results for theories on the sources of trust are discussed.

Keywords

trust, altruism, community, morality/moral behavior, prosocial behavior, political sociology

Is trust malleable and dependent on social experiences, or is it rigid and resistant to change? A series of influential articles and books argue that generalized trust is a stable psychological disposition that is not subject to change as a result of social interactions (Becker 1996; Couch and Jones 1997; Uslaner 2002, 2008). An equally influential perspective, in contrast, suggests that trust can be socially learned and modified by current and recent social circumstances (Glanville and Paxton 2007; Hardin 2002; Macy and Sato 2002; Putnam 2000). We address this debate by designing and implementing an experiment that exposes participants to a high or low trust environment and compares their change in generalized trust. If the rigid view is correct, then trust should be largely impervious to interpersonal encounters occurring in the laboratory. If the malleable view is correct, then trust should respond to such encounters by increasing or decreasing accordingly. In addition to shedding light on an

important theoretical question, another key benefit of this article is the development of an experimental protocol to simulate a low or high trust environment for use by other researchers.

TRUST: RIGID OR MALLEABLE?

Yamagishi and Yamagishi (1994:139) define generalized trust as “a belief in the benevolence of human nature in general.” Two perspectives on generalized trust dominate the literature. One perspective views trust as rigid; trust is shaped early in the life course, after which point it is generally stable and unlikely to be modified by day-to-day experiences. Some scholars see trust as

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a psychological trait or general disposition of an individual that is either innate or learned early in life through interactions with the primary caregiver (Becker 1996; Bowlby 1969; Couch and Jones 1997; Erikson 1964; Jones 1996; Uslaner 1999, 2002). This perspective implies that trust is largely unwavering—"individuals vary in trust more-or-less independent of their contemporary interpersonal experience" (Couch and Jones 1997:322). Thus, trust is "a world view, not a summation of life experiences" (Uslaner 1999:138; see also Uslaner 2012:8–9), and generalized trust "is not experience-based trust" (Uslaner 2008:291). A rigid view does not preclude an individual changing his or her view of another person's trustworthiness. What a rigid view *does* suggest is that these current experiences are not extrapolated to generalized trust.

An alternative perspective holds that trust is malleable and is socially learned from both past and contemporary life experiences (Glanville and Paxton 2007; Hardin 2002; Macy and Sato 2002; Offe 1999; Rotter 1971; Van Lange, Vinkhuyzen, and Posthuma 2014; Yosano and Hayashi 2005). In this perspective, "each individual encounters a variety of others who treat him positively or negatively, who keep their promises or do not. Each person generalizes from these past experiences in the process of developing expectancies about how the next person will treat him" (Stack 1978:563). People make their "skeptical judgment largely by generalization from past encounters with other people" (Hardin 2002:113).¹

¹It is important to distinguish between generalized trust and trustworthiness, which are distinct but correlated concepts (Hardin 2002; Kuwabara forthcoming; Simpson and Eriksson 2009). While Hardin (2002) questions whether what others refer to as generalized trust is actually trust, he argues that inductive generalization from social encounters that exhibit trustworthiness do not contribute to a generalized expectation about whether others are trustworthy.

In this view, an individual's current level of generalized trust results from a wide-ranging summation of experience (Rotter 1971).²

To date, empirical research to adjudicate this debate has relied on survey data and draws mixed conclusions. In support of trust as rigid, Uslaner (2002) uses survey data to demonstrate that generalized trust is relatively stable over time, suggesting that trust is not modified by recent social experiences. Further, he finds that current trust is not influenced by whether an individual reports having been helped by someone when young, suggesting that early experiences with cooperation do not inform trust. In contrast, other studies suggest that trust generalizes from social interactions. Glanville and Paxton (2007) show that a model that incorporates a generalization mechanism is more consistent with data (see also Freitag and Traummüller 2009). Longitudinal studies find that changes in informal ties (Glanville, Andersson, and Paxton 2013) and social support (Li, Pickles, and Savage 2005) predict changes in trust. Another line of research suggests that positive interactions with socially similar others might not lead to trusting strangers, but that positive interactions with dissimilar others should. Research observes a positive association between generalized trust and membership in diverse voluntary associations (Stolle 1998) and social interactions in diverse neighborhoods (Marschall and Stolle 2004).

Thus, earlier work based on surveys has suggested that positive experiences with regular interaction partners lead to

²Social learning extends beyond personal learning to encompass observations of others' experiences. Observing and evaluating interactions between other actors acknowledges reputational effects, past behavior, third-party exchanges, and so on that would be evident in observing others' interactions as well as one's own.

greater trust. However, given that this earlier work is observational, it is open to critiques about self-selection and omitted variable bias. As explained by Nannestad (2008:419) in his review of research on generalized trust, “endogeneity problems abound in the analysis of survey data on generalized trust.” Prior research has attempted to overcome problems of spuriousness, selection, and simultaneity by using extensive controls, retrospective reporting of life events, or longitudinal designs. Even so, such designs remain hampered by a focus on naturally occurring groups and experiences. As explained by Glanville et al. (2013:557), “the fixed-effects approach, by regressing change on change, eliminates the influence of unobserved heterogeneity but does not reveal the direction of causality between two changes. Thus, our major contribution rests on eliminating bias from unobserved factors and contemporaneous life changes rather than on a strict specification of causal direction.” To truly uncover whether cooperative and noncooperative social experiences are summatively used in arriving at generalized trust, we need a laboratory experiment.

In this study, we address this debate by inducing high and low trust environments in the laboratory. We simulate groups of people who exhibit either high or low levels of trust. Some participants witness interactions characterized by high levels of trust and trustworthiness and also experience high trust interactions themselves. Other participants both witness and experience low trust interactions. If experience and recent social circumstances matter for the formation of generalized trust, then participants exposed to the high trust context should subsequently declare higher levels of trust and vice versa. If experience and recent social circumstances *do not* matter for the formation of trust, then

participants should not change baseline levels of trust based on exposure to either the high trust context or low trust context.

EXPERIMENTAL STUDIES OF TRUST

The classic and often employed trust experiment is also sometimes referred to as the investment game (Berg, Dickhaut, and McCabe 1995). In the standard version, two participants are randomly assigned as partners, one as the first mover, and the other as the second mover. The first mover receives some amount of money and may transfer any part of it to the second mover. The amount transferred is tripled by the experimenters. In the second stage, the second mover may then transfer any part of the tripled amount back to the first mover. The first mover's choice to transfer a nontrivial amount of money is interpreted as trust because he or she is at risk of not receiving any back. A series of experiments have demonstrated that first movers often send anywhere from 50 percent to 100 percent of their money to the second mover, and second movers typically return at least what they received (see Johnson and Mislin 2011 for a meta-analysis). Some portion of first movers do exhibit nontrusting behavior, however. And a significant subset of second movers do not repay the trust placed in them but keep all of the money transferred.

In this study, we build on this prior work by using the trust experiment as a way to expose participants to a high trust or low trust environment. Similar to variants of the trust game where participants are informed of features of other players (Anderson, Mellor, and Milyo 2006), we present participants with the (experimenter-manipulated) results of multiple rounds of the game that we engineered to display high levels of trust and reciprocity or very low levels of trust

and reciprocity. That is, we simulate Stack's (1978:563) "others" who treat individuals "positively or negatively." One set of participants is exposed to a group of first movers who exhibit trust by sending large amounts of their endowment to the second movers. Further, that set of participants sees trust as well placed, with other second movers returning significant portions of the tripled money. The other set of participants, in contrast, is exposed to a set of first movers who do not exhibit trust. These first movers do not send any money or only a very small amount. Further, when these first movers do send small amounts, their trust is not well placed, as the second movers sometimes return nothing and other times very little.

EXPERIMENTAL DESIGN

Undergraduates at a large Midwestern university were recruited for a study on "how people make exchange decisions" through an email invitation sent to all undergraduates. One hundred ninety-four participants (134 female, $M_{\text{age}} = 20.25$) completed an online survey before signing up for an experimental session at least one week later. Generalized trust is measured by agreement (0–10) with "Most people can be trusted" or "You can't be too careful in dealing with people."³

Upon arrival at their laboratory session, participants were introduced to the game. Participants were told that they had been randomly assigned to the second mover position and that they were

playing the game with nine other unseen participants using a computer interface. Participants would play ten rounds of the game and were told that the first mover with whom they were paired would be randomly selected in each round. All interaction partners were, in actuality, simulated. Key to the experimental design is that at the end of each round, participants viewed a summary of exchanges between all five first/second player pairs.

In both conditions, the first movers began with an endowment of \$8. In the high trust condition, all five computer-simulated first movers transferred varying, but large, amounts of their endowment (range, \$6–\$8, with a mean of \$7.18 across movers and rounds). The computer-simulated second movers reciprocated about half of the tripled amount they received (an average of 51 percent across second movers and rounds), which is a higher reciprocation rate than typical for trust games (Johnson and Mislin 2011) and demonstrates a good deal of trustworthiness. In the low trust condition, the first movers transferred either nothing (31 out of 50 times) or only a small amount (\$1–\$3) of their endowment. In this condition, most of the computer-simulated second movers reciprocated approximately the same amount that was transferred to them, which is typical of participants in trust games. Further, one of the second movers always returned nothing, further reducing reciprocation. Overall, the second movers returned an average of 26 percent. Table 1 provides amounts transferred across movers for both conditions.

At the end of each of the ten rounds, a summary table of interactions was provided to participants. The summary tables seen by participants in the high trust condition repeatedly demonstrated trusting and reciprocating interactions whereas in the low trust condition,

³An alternative measure combining the trust question with two other measures, "Most people would try to take advantage of you if they got the chance" or "try to be fair" and "Most of the time people try to be helpful" or "they are mostly looking out for themselves" produces nearly identical results. Another alternative measure including only the fair and helpful items also produced the same results.

Table 1. Simulated Exchanges in Ten Rounds of the Trust Game

	Amount sent by first mover/amount returned by second mover in									
	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8	Round 9	Round 10
High trust condition										
Pair 1	8/12	7/11	7/11	8/12	6/9	8/12	7/11	7/11	7/11	7/11
Pair 2	6/9	6/9	7/10	7/10	8/12	6/9	6/9	7/10	8/12	8/12
Pair 3	7/10	8/11	6/8	8/10	7/8	7/10	8/11	8/10	8/11	8/10
Pair 4	6/10	6/11	7/11	7/11	7/12	8/13	8/14	7/11	7/12	7/13
Pair 5	7/	7/	8/	6/	8/	6/	7/	8/	7/	8/
Low trust condition										
Pair 1	0/NA	2/3	0/NA	2/3	1/1	1/1	0/NA	0/NA	1/1	0/NA
Pair 2	0/NA	0/NA	1/1	1/1	0/NA	1/1	1/1	0/NA	0/NA	0/NA
Pair 3	2/0	0/NA	3/0	0/NA	1/0	2/0	0/NA	0/NA	1/0	0/NA
Pair 4	3/4	2/1	2/2	1/1	0/NA	0/NA	0/NA	0/NA	0/NA	1/1
Pair 5	1/	3/	0/NA	0/NA	2/	0/NA	2/	1/	0/NA	0/NA

Note: Here, the experimental participant was the second mover in Pair 5 in both conditions. In the actual experiment, the participant perceived themselves as being a member of different pairs in different rounds. NA = “not applicable” (participants could not send anything back when the first mover sent nothing).

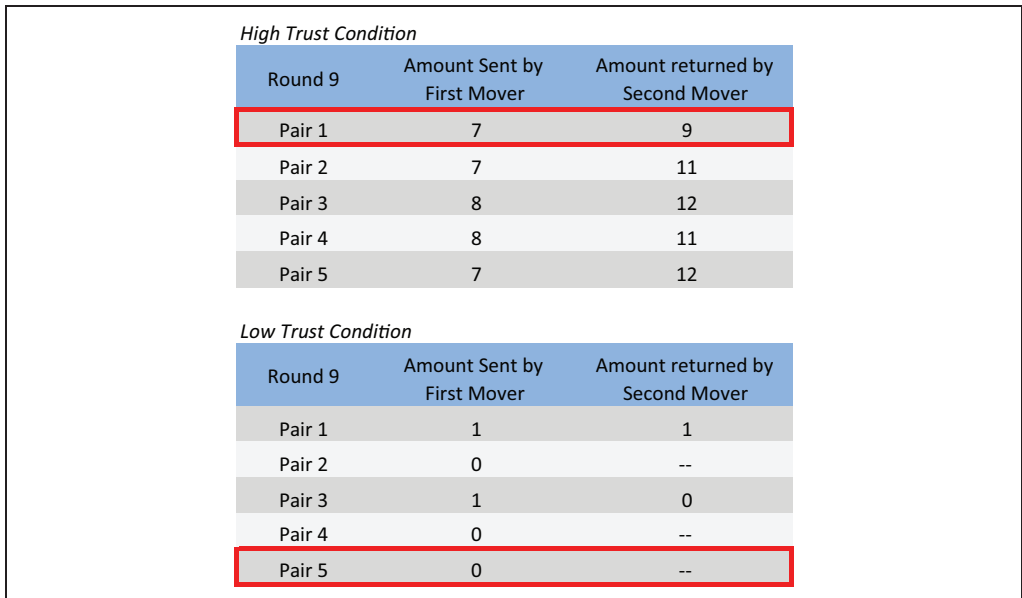


Figure 1. Sample Screenshot of Summary Provided to Participants

participants witnessed first movers rarely sending money and second movers not reciprocating at high rates. Figure 1

provides a sample summary table, for the high and low trust conditions, that participants saw at the end of every

Table 2. Means of Trust and Change in Trust

Condition	Preexperiment trust	Postexperiment trust	Change in trust	Change in trust, low trusters ^a	Change in trust, high trusters ^b
Low trust (n = 80)	5.74 (2.14)	5.10 (2.24) ^c	-.64 (1.89) ^c	.17 (1.82) ^c	-1.12 (1.78) ^c
High trust (n = 81)	5.21 (2.18)	5.87 (2.04)	.64 (2.13)	1.39 (2.52)	-.13 (1.26)

Note: Standard deviations given in parentheses.

^aN for low trust condition = 30; n for high trust condition = 50.

^bN for low trust condition = 41; n for high trust condition = 40.

^cStatistically significant difference across conditions, $p < .05$.

round. Our goal is to simulate a climate of high or low trust, which entails manipulating both first and second mover behavior. However, since the participant is embedded in and participating in these interactions (rather than simply observing), we cannot separate the effects of observing others behaving in a trusting manner (or not) from having others trust or not trust the participant personally.⁴

For consistency, we ensured that participants in each condition earned approximately the same amount (\$24.59 high trust vs. \$24.82 low trust) by manipulating the final payment as a combination of a “show-up” payment and the amount earned during the game. After the experiment, participants completed a questionnaire that included the same question about generalized trust they had answered at least one week earlier as well as manipulation check questions. Cognitive testing of the generalized trust question suggests that a strong majority of respondents use a general perspective

to formulate their response (Uslaner 2002). Thus, while we expect our participants to be influenced by the climate they just experienced in formulating their generalized response, they should be at least somewhat resistant to simply replacing their general cognitive frame with a particularized one. The research assistant then conducted an exit interview, which included questions designed to detect suspicion, and then debriefed participants. Suspicion was detected in 31 participants during the exit interview, with no statistical difference in the proportions that were suspicious across the two conditions.⁵ These participants are omitted from the analyses presented in the following; however, the same substantive results hold when they are retained. Two additional participants were omitted due to missing data on trust.

RESULTS

Table 2 summarizes the pre- and postexperimental means of trust and changes

⁴The experiment manipulates three things simultaneously: observing others trusting others (or not), observing others reciprocating that trust (or not), and having others trust or not trust the participant personally. Further, the participants have the choice of a trustworthy or untrustworthy response. The research presented here is an important preliminary step in understanding whether trust is responsive to social interactions, but future research should attempt to separate and adjudicate these mechanisms.

⁵Suspicion was detected through the following questions: “Who do you think the other participants in this study were today?” and “Do you think your decisions during the game affected your final payment?” Most of the suspicious participants answered that they thought that the other “players” were computers. Some had participated in an experiment with deception before or indicated they were aware that deception is sometimes used in experiments.

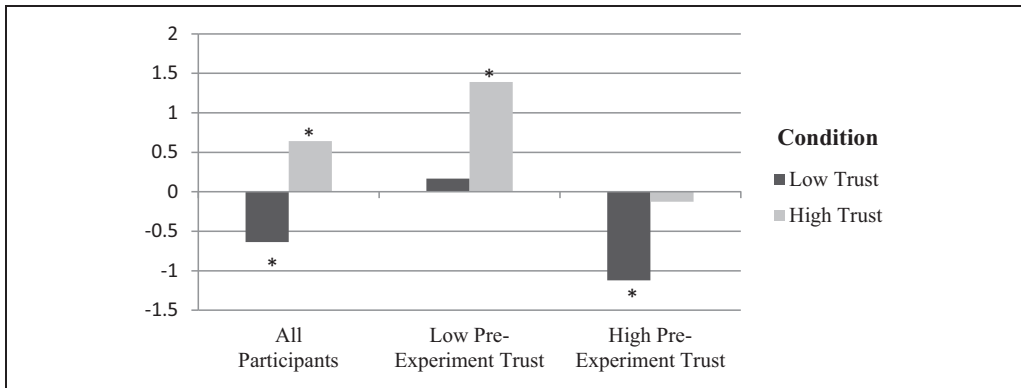


Figure 2. Change in Trust across Condition and Preexperimental Trust

*Indicates a change that is statistically different from 0 ($p < .01$).

in trust across condition. Figure 2 presents change in trust across the two conditions for all participants and for participants divided by their preexperimental trust. As the malleable perspective predicts, participants' levels of trust are influenced by the experimental condition. The left side shows that individuals in the high trust condition increased their level of trust by .64 on average whereas

individuals in the low trust condition decreased their levels of trust (mean = $-.64$). The difference between conditions is 1.28, $t(159) = 4.03$, $p < .001$. The difference of 1.28 is over half of a standard deviation of trust measured before the experiment (2.16). These results indicate some support for the social learning perspective.⁶

A stronger test of whether social experiences influence trust would take into account whether the experimental condition matches participants' prior levels of trust. If social encounters influence trust, then experiences that are inconsistent with prior expectations should be more likely to change assessments of trust than experiences that are consistent with prior expectations. In other words, participants presented with a trust climate that is consistent with their prior levels of trust would have little reason to update their expectations.⁷ Therefore,

⁶We assessed two alternative explanations for these results in additional analyses. First, to investigate whether participants' estimation of their own trustworthiness might explain the changes in trust across condition (Kuwabara forthcoming), we regressed change in trust on condition and average percentage the participant sent back during the trust game. Percentage sent back is not a significant predictor of change in trust, and including it in the regression does not change the magnitude of the predicted difference in change in trust across conditions. Second, participants may experience differences in reward satisfaction or feelings of deprivation across the conditions, and these feelings might lead to higher or lower trust. Thus, in an additional regression, we controlled for the degree to which participants felt that the outcome of the game was fair and how frustrating they found the game. Frustration is not a significant predictor of change in trust. Perception of fairness is a significant and positive predictor of change in trust, though including it in the regression reduces the coefficient for condition by less than half of a standard error.

⁷Alternatively, in some circumstances, people may be more likely to resist changing attitudes in the face of contradictory evidence (Wegener et al. 2004). While this is an interesting possibility, we do not expect that this would be the case for trust in this experiment because our participants were not presented with an explicit narrative designed to present evidence against their prior belief.

we examine whether participants whose preexperiment levels of trust are mismatched with the experimental condition in which they were randomly placed express greater changes in trust. We divide the participants into high (greater than 5) and low initial trust (5 or less).

As the rest of Figure 2 demonstrates, it is the participants whose preexperimental level of trust is mismatched with their condition whose trust changes (see also Table 2). Change in trust for previously high trusters in the low trust condition was -1.12 , about half a standard deviation change in initial trust. Change in trust for previously low trusters in the high trust condition was 1.39 , about two-thirds of a standard deviation of initial trust. In contrast, high trusters in the high trust condition and low trusters in the low trust condition had no statistically significant change in their assessments of generalized trust.⁸ In short, the results suggest that assessments of generalized trust can be influenced by short-lived encounters.

DISCUSSION AND CONCLUSION

Whether people learn to trust or distrust generalized others in part through contemporary social interactions is a subject of debate. By creating high and low trust situations in the laboratory, the current study speaks to this debate by providing evidence for a causal relationship between experiences and trust that is free of self-selection. We find that a relatively short laboratory session does

indeed change the trust expressed by participants whose preexperimental levels of trust were mismatched with the level of trust that characterized the social interactions they experienced and witnessed during their laboratory session. In other words, it appears that participants reformulated their positions on trust after encountering experiences inconsistent with their prior expectations by dynamically summing and generalizing from interactions (Stack 1978). When it comes to trust, we are “Bayesian” updaters (Hardin 1992). Coupled with other research that uses diverse sets of methods (Freitag and Trau Müller 2009; Glanville et al. 2013; Glanville and Paxton 2007; Macy and Sato 2002; Macy and Skvoretz 1998), we now have significant evidence that generalized trust is experience-based and responsive to social interactions.

Of course, our results do not speak to the issue of whether the changes in trust produced by our manipulation are short-lived or longer lasting. Presumably, participants' preexperimental trust is based in part on interactions in their daily lives, and therefore, one would expect that their level of trust would readjust to preexperimental levels upon returning to everyday routines or usual interaction partners. What our experimental results suggest instead is that social interactions can indeed shape trust in generalized others. Furthermore, these changes in trust were not brought about by extraordinarily negative or positive social experiences, such as criminal victimization or receipt of a donated kidney. The implication is that if someone's social experiences change appreciably and over a longer period of time, their trust would follow. At the same time, a limitation of the analysis is that our postexperimental measure of generalized trust comes very soon after the experimental manipulation. Therefore, even though the question is designed

⁸To investigate whether ceiling and floor effects are responsible for this lack of change, in an additional analysis, we excluded participants whose preexperimental level of trust was at or near the end points (under 2 or over 8) and accordingly had little to no opportunity for change if placed in the condition consistent with prior trust. We also see no evidence for a change in trust among the matched participants in this auxiliary analysis.

to capture generalized trust, it is possible that the postexperiment responses tapped the participants' very recent exchange situation. It remains an open question how long a single experience may continue to influence generalized trust. Future research could measure participant trust immediately following the experiment, as well as in the days and weeks after the experiment, to investigate how increases or decreases in trust are maintained.

An additional contribution of this research is that it provides a protocol for manipulating trust in the laboratory. Other researchers could use this design to examine whether trust is causally related to other outcomes, such as generosity, work-group performance, or tolerance. Further, our participants believed they were interacting with faceless strangers. Researchers could attach images to the other players to manipulate perceptions of diversity/homogeneity and address the hotly debated issue of the relationship between trust and diversity. One could also examine whether cooperative interactions with socially dissimilar players lead to greater changes in trust than those with similar players (e.g., Marschall and Stolle 2004).

In closing, our results suggest that involvement in high trust social settings influences an individual's perception that most others can be trusted, especially when an individual's earlier level of trust is low. As such, trusting informal interactions across a variety of spheres, as well as interactions within formal setting such as the workplace and voluntary associations, may promote trust in others even for those who have had unfavorable experiences in the past. This suggests that policy initiatives that strengthen social involvement in high trust situations, enhance institutional environments promoting trust (Kuwabara forthcoming), or provide third-party assurance to facilitate trust could be advantageous (but see

Simpson and Eriksson 2009). This is an encouraging and significant finding that suggests personal interactions and policy prescriptions can help rebuild trust and, with it, key social institutions.

ACKNOWLEDGMENTS

The authors contributed equally to this paper. We thank Donna Lancianese for research assistance and Matt Andersson, Sarah Harkness, Steve Hitlin, David Pedulla, the SPQ editors, and three anonymous reviewers for feedback on earlier drafts.

FUNDING

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: We gratefully acknowledge support from the Science of Generosity (University of Notre Dame/Templeton Foundation) and the Social Sciences Funding Program at the University of Iowa.

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BIOS

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