

## THE HARBAUGH EFFECT: A SPIKE IN MICHIGAN ALLEGIANCE DISPLAYS IN A CITY WITH DIVIDED LOYALTY

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### ABSTRACT

*This manuscript discusses coalitional behavior from an ethological perspective and tests a hypothesis regarding displays of group allegiance using observational methods. Tinbergen's Four Questions (T4Q; Tinbergen, 1963) is a powerful explanatory framework for building a comprehensive understanding of behavior in humans and other species. Following T4Q, coalitional behavior is examined regarding evolutionary adaptiveness, phylogenetic history, proximate causation, and developmental ontogeny. Team sports are an intuitive domain for the illustration of patterns and principles in coalitional behavior. Athletic team loyalty is often communicated non-verbally through the display of apparel and paraphilia featuring university or team names and logos. Previous research documented increases in apparel displays after winning games. Toledo, Ohio is on the Michigan-Ohio border and was originally considered within Michigan Territory. The area contains a mixture of Ohio State University (OSU) and University of Michigan (UM) football fans and merchandise featuring each school is widely available. An observational study in the Fall 2013 collegiate football season found a ratio of approximately 3:2 for individuals displaying OSU and UM branded items. The hiring of Jim Harbaugh as Michigan's new head coach in 2015 was expected to generate an increase in displays of UM branded items. Observations in the 2015 and 2016 seasons found equivalent rates of display for UM and OSU branded items, and a significant increase in displays of UM branded items from 2013.*

**Keywords:** Tinbergen, T4Q, observational research, allegiance, Harbaugh.

## INTRODUCTION

This manuscript discusses coalitional behavior and a useful explanatory framework for building a comprehensive understanding of behavior in humans and other species. This framework may be particularly valuable for contemporary human scientists as it explicitly addresses many of the common misunderstandings of evolutionary explanations for human behavior and its consequences. T4Q illustrates the respective roles of proximate psychological mechanisms that facilitate adaptive behavior; the development of behaviors across the lifespan and environmental influences facilitating this development; evolutionary selection pressures shaping behavioral tendencies and how this variation relates to reproductive success; and cross-species comparisons further illustrating the evolutionary origins and history of behavioral patterns.

These complementary perspectives provide convergent evidence and a more holistic understanding than any single type of research program. The current study is conducted in the context of team sport competition and rivalry, an expression of evolved coalitional psychology in a modern context.

### ***Evolutionary Adaptiveness of Coalitional Behavior***

Alexander (1979) argued that once our hominid ancestors achieved dominance over the other animal species in their ecologies, inter-group competition became the greatest selection pressure in recent hominid evolution. Creating coalitional alliances facilitates cooperation, even when the identities of other individuals are unknown (Ruffle & Sosis, 2006). These alliances promote the acquisition of resources, territories, and reproductive partners, all important factors for ensuring reproductive success (Kenrick, Li, and Butner, 2003). Our hominid ancestors lived the vast majority of their evolutionary histories in small tribes competing for scarce resources, so humans may inherently experience distrust and hostility towards out-group members (Balliet, Wu, & De Dreu, 2014; Halevy, Weisel, & Bornstein, 2011; King & Wheelock, 2007; Richerson & Boyd, 2001; Wrangham & Peterson, 1996). Group identities may define extent and limit of cooperative interactions (Makimura & Yamagishi, 2003; Yamagishi, Jin, & Kiyonari, 1999; Yamagishi & Kiyonari, 2000) as well as protection from the hostile actions of others (DeScioli & Kurzban, 2013). Coalitional biases favoring in-group members over out-group members are extensively documented (see Ruffle & Sosis, 2006).

### ***Phylogenetic History of Coalitional Behavior***

A wide variety of social species exhibit behavioral patterns related to in-group loyalty and inter-group competition (see Van der Dennen, 2002). Van der Dennen (1999) proposes that coalitional behavior in social carnivores and primates is based on an ability for selfish and opportunistic cooperation with more than one conspecific. When two groups in a social species meet in an agonistic encounter, individuals attempt to protect their vulnerable flanks by physically aligning with neighboring in-group members, and this process forms the basis for coalitional behavior (Turney-High, 1849/1971). Polyadic coalitions arise from a combination of a capacity for sociality among long-lived social species (Low, 1993), socially opportunistic (i.e., Machiavellian) intelligence, and proto-ethnocentrism. Proto-ethnocentrism in turn arises from the ability to recognize and

discriminate between in-group and out-group members, and to favor in-group members for reciprocal interactions such as protection and sharing of resources (Van der Dennen, 1999). Tooby and Cosmides (1988) propose that coalitional aggression is relatively rare across species because it requires sophisticated and specialized computational architecture that arises from specific conditions and selection pressures.

In female philopatric primate species and social carnivores, females are more often engaged in inter-group stand-offs than males, though most of the time this posturing does not lead to actual violent engagement of the rival group (van der Dennen, 2002). The chimpanzee-bonobo-human clade is male philopatric and thus males can ultimately benefit from inter-group raids through access to reproductively valuable females (Low, 1993). Manson and Wrangham (1991) note that members of this clade are distinguished from gorillas and orangutans in their retention of predominantly male offspring, polygynous mating in groups with multiple adult females, cooperation in the defense of a restricted territorial range, and strategic aggression against males from rival groups. Bonobo chimpanzees (*Pan paniscus*) exhibit intergroup agonistic behaviors, but do not appear to conduct lethal raiding on neighboring groups (Ghiglieri, 1999). Bonobo societies are characterized by power-sharing arrangements between males and females, whereas common or robust chimpanzees (*Pan troglodytes*) live in patriarchal groups where males are dominant over females (Wrangham & Peterson, 1996). In addition to male-male cooperation, in-group favoritism, and group territoriality, the transfer of females from one group to another may create the necessary conditions for patterns of lethal inter-group competition (Manson & Wrangham, 1991; Wrangham & Peterson, 1996). Intra-group killings in common chimpanzees are extremely rare and may be a result of extreme intrasexual competition among males (Wilson & Wrangham, 2003). However, common chimpanzees are highly territorial and form social groups to protect themselves from out-groups (Alexander, 1979; Wrangham & Peterson, 1996). Common chimpanzee inter-group encounters are often hostile, males patrol the boundaries of their territories and raid the territories of other groups, sometimes with lethal outcomes (Goodall, 1990). The systematic raiding of neighboring territories by male chimp coalitions can eliminate out-group males and expand territories, enabling the control of more female territories (Mitani, Watts, & Amsler, 2010). There is considerable evidence for violent inter-group competition across hominid history, including mass graves from as early as 200,000 years ago full of bodies exhibiting violent injuries (Keeley, 1996).

### ***Proximate Causation of Coalitional Behavior***

Wrangham and Peterson (1996) hold that the male coalitional psychology underlying common chimpanzee raiding parties, pre-state warrior societies, human urban gangs, and technologically advanced warfare is fundamentally the same. The importance of group loyalty in socialization has a long history of recognition in social psychology (e.g., Bogardus, 1924). Our evolved psychology is likely to include coalition-detection mechanisms that are sensitive to indicators of alliances (Kurzban & Leary, 2001). Remarkably, ingroup favoritism can emerge merely from referring to newly created categories as “groups” and randomly assigning individuals to group membership (Billig & Tajfel, 1973). Displaying allegiance signals, for example through articles of clothing, can activate coalitional psychology for both observers and the person making the display

(Kurzban & Leary, 2001; Schaller, Park, & Faulkner, 2003). The differentiation of mutually-exclusive groups is fundamental to coalitional psychology and even superficial criteria can lead to group differentiation, deep emotional attachments to in-groups, and discrimination against out-groups (Brewer, 1979; Ostrom & Sedikides, 1992; Sherif, 1966; Tajfel & Turner, 1979; Wetherell, 1982).

Coalitional alliances foster cooperation and also influence penalties for cheating (Tooby & Cosmides, 2010). Members of an Israeli kibbutz were more cooperative toward other kibbutz members than toward other residents of the same city, even when individual identities were concealed (Ruffle & Sosis, 2006). Members of New Guinean tribes will pay higher costs to punish defectors from other tribes than defectors from their own tribe (Bernhard, Fischbacher, & Fehr, 2006). Similar patterns of intergroup bias are evident in university undergraduates (Lieberman & Linke, 2007), soccer clubs and political parties (Schiller, Baumgartner, & Knoch, 2014) and Swiss Army officers, who punish transgressions even more harshly when in competitive environments between groups (Goette, Huffman, Meier, & Sutter, 2010).

### ***Developmental Ontogeny of Coalitional Behavior***

The psychological foundations for coalitional behavior emerge early in human development and coincide with the developmental emergence of other attributes. By three months of age, human infants show a significant attentional preference for own-ethnic group faces (Kelly, Quinn, Slater, Lee, Gibson, Smith, Ge, & Pascalis, 2005). At six months, prelinguistic human infants give preferential attention to speech in their native language and accent (Kinzler, Dupoux, & Spelke, 2007). By 10 months, infants are more likely to reach for toys offered by native language speakers than foreign language speakers (Kinzler, Dupoux, & Spelke, 2007). Linguistic competencies create cognitive scaffolding for coalitional psychology and behavior. Infants can categorize objects into groups with noun labels at 11 months (Waxman & Booth, 2003) and use adjectives to describe group attributes at 21 months (Waxman & Markow, 1998). By age one, infants prefer puppets who share their food preferences (Mahajan & Wynn, 2012).

By age four, children predict that social conflict between individuals from different novel social groups will lead to avoidance of and direct harmful actions toward outgroup members (Chalik & Rhodes, 2014). Merely assigning T-shirt color leads to weak in-group favoring biases in four and five-year-olds, biases are moderately stronger when the teacher actively referred to color groups (Patterson & Bigler, 2006). Children preferred individuals who stayed in a losing group over defectors to a winning group at age four, with even stronger preferences at age five (Misch, Over, & Carpenter, 2014). Children ages four and five were significantly less likely to reveal a puppet's secret to receive stickers for an in-group puppet than an out-group puppet (Misch, Over, & Carpenter, 2016). Children systematically pay costs to punish third-party selfishness at age six (Bernhard, Fischbacher, & Fehr, 2006), and more so when the selfish individual was an out-group member or the disadvantaged recipient was an in-group member (Jordan, McAuliffe, & Warneken, 2014). Segregation and competition between groups of randomly assigned 11 and 12-year old boys at a summer camp led to hostile and aggressive attitudes towards the outgroup (Sherif, Harvey, White, Hood, & Sherif, 1961). Superordinate goals requiring united cooperative action reduced group friction and facilitated positive intergroup relations (Sherif et al., 1961).

### ***Team Sports and Coalitional Psychology***

Evolved coalitional psychology of in-group loyalty and inter-group competition manifests in the contemporary context of professional and collegiate team sports (Kruger, Wang, & Wilke, 2007; van der Dennen, 2002; Winegard & Deaner, 2010). Symons (1978) noted that humans are the only species that plays in teams. The physical activities of team sport competitions are similar to behaviors in territorial raiding (Scalise Sugiyama, Mendoza, & White, 2016; Winegard & Deaner, 2010). Previous researchers have interpreted college football rivalries between competing institutions in the same geographic region as ritualized warfare (Zillmann, Bryant, & Sapolsky, 1989). During team games, men in foraging tribes utilize motor skills involved in actual forager warfare (Scalise Sugiyama et al., 2016). These similarities were recognized in ancient times, across a wide variety of cultures and geography including Mesoamerica (Wilkerson, 1991), the ancient societies of Japan and Korea, Han dynasty China, and Classical Greece, (Crowther, 2007). Ritualized combat can be seen in the tournaments of advanced tribal societies with fairly dense populations. These tournaments test the strength of opponents in ways that enable the peaceful resolutions of inter-group conflicts. However, if a group detects a substantial imbalance of power, these ritual battles can transition into actual violent combat and potential massacres (Divale, 1973; Durham, 1979). Some Australian tribes also used ritualized combat for settling disputes (van der Dennen, 1998).

Winegard and Deaner (2010) proposed that spectator interest in team sports is also a product of evolutionary adaptations for forming and maintaining coalitions in small-scale warfare. Fans of sports teams demonstrate alliances behaviorally by expressing commitment to the group's goals, providing material support, displaying the group's symbols, and monitoring the group's competitions (Winegard & Deaner, 2010). Fans of sports teams may not receive the material benefits of inter-group conflict, though they may benefit through psychological mechanisms (Deaner, Balish, & Lombardo, 2016). Being a fan of a team can provide feelings of social connectedness, especially after team wins (Wann, 2006). Fans often behave as if they were actual members of the team (Wann, 2006). Those who highly identify with their teams are more likely to endorse group-relevant moral concerns, especially in-group loyalty (though not individualizing moral concerns such as harm or fairness; Winegard & Deaner, 2010) and are more willing to commit acts of aggression against rival players and coaches (Wann, Haynes, McLean, & Pullen, 2003).

University and sports team paraphernalia function as group identifiers and may activate proximate motivations, mechanisms, and functions in the evolved psychology of inter-group competition. Apparel and paraphilia displaying university or team names and logos frequently communicate athletic team loyalty non-verbally (End, Dietz-Uhler, Harrick, and Jacquemotte, 2002; Lindquist, 2006). Identification with a team uniquely predicts intentions to consume sports merchandise (Trail, Fink, & Anderson, 2003). When athletic team competition resembles characteristics of warfare, including visual symbols of group identification and benefits from winning, individuals will be more likely to join teams (Winegard & Deaner, 2010). Athletic teams often perform a series of rituals to build intense loyalties in their players, including staged public signing events where players symbolically don the team's uniform and announce their commitments

(Trice & Beyer, 1984). Displays of such paraphernalia may mimic the territorial markings and ritualized competitions of other animal species and aggregated displays may function in dominance competitions for a local area. Team victories increase the number of individuals seen wearing university-related apparel on campus (Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976).

### ***Historical and Social Context for the Current Study***

Tinbergen (1957) defined territory as “a defended area” and the product of two independent tendencies, hostility towards potential competitors and attachment to a geographical site or area. The word “rival” derives from the Latin “rivalis,” one who uses the same stream as another individual, and/or someone on the other side of the river. In 1835, the U.S. State of Ohio and the Michigan Territory mustered militias on opposite sides of the Maumee River in attempts to control the contested area known as the Toledo Strip. Although the United States Congress designated the area as part of the State that became Michigan, the drafters of the 1803 Ohio state constitution added a special provision claiming the Toledo Strip as part of the new state. The “Toledo War” was the largest U.S. inter-state conflict prior to the Civil War.

The “Border Battle” between the Ohio State University (OSU) and University of Michigan (UM) football teams recapitulates this territorial dispute (Emmanuel, 2004). The University of Michigan (UM) – Ohio State University (OSU) Division I football rivalry, ranked as the greatest North American sports rivalry by the Entertainment and Sports Programming Network (ESPN). The teams have been each other’s chief rivals since at least 1918 (Lindquist, 2006). Both the fierce rivalry between the university football teams and the divided team loyalties among local residents, sometimes differing even within the same household, are significant features of the Toledo area’s culture. Although in Ohio, Toledo is more than twice as far from Columbus, OH (home of OSU) as it is to Ann Arbor, MI (home of UM). The salience of these phenomena peak near “The Game” (as it is widely known) between UM and OSU, the concluding match of the regular National Collegiate Athletic Association Division I football B1G Conference (formerly “Big Ten Conference”) season. Merchandise featuring both universities is widely available in the Toledo area, general merchandise stores typically display OSU and UM items adjacently and in equal proportions. There are also stores featuring the rivalry as a theme, such as the Buckeye Wolverine Shop, which display team merchandise in segregated sections. In part due to the extensive marketing efforts of the university’s athletic departments, both the Michigan Wolverines “Block M” and Ohio State Buckeyes “O” logos are easily seen and recognized.

### ***Historical and Social Context for the Current Study***

In 2013, an observational assessment of over 4000 individuals in the Toledo area documented 6.4% displaying university-related merchandise (Kruger & Kruger, 2015). The proportion of individuals displaying OSU-related merchandise (2.5% of sample) was approximately 50% greater than the proportion of individuals (1.7% of sample) displaying UM-related merchandise. The initial study was conducted during the third season with UM head coach Brady Hoke. Hoke achieved a respectable 11 wins, 2 losses (6–2 in the Big Ten) in his first year of coaching, though the team’s performance declined to 7 wins, 6 losses (3–5 in the Big Ten) in 2013. The team’s 2014 performance of 5 wins,

7 losses (3–5 in the Big Ten) was also far below Michigan's .73 average of winning games in their current all-time record of 935–334–36. This was only the third season since 1975 in which Michigan did not play a post-season bowl game, and Brady Hoke was fired on December 2, 2014.

On December 30, 2014, Michigan hired James “Jim” Harbaugh, a former Michigan quarterback during the so-called “Ten-Year War” whose team defeated Ohio State in both matches in which he played (Schlabach, 2015). The rivalry was particularly fierce at this time, as Michigan coach Bo Schembechler was a former assistant coach to Ohio State's coach Woody Hayes. As soon as Harbaugh's hiring was announced, there was a visible boost in University of Michigan Football boosterism. Billboards immediately appeared around Ann Arbor reading “Welcome home, coach” and “Ann Arbaugh” (Manzullo, 2014). Harbaugh was born in Toledo, as was Urban Meyer, the current head football coach of the Ohio State Buckeyes. We predicted that the relative proportion of individuals displaying UM allegiance in Toledo would be higher in 2015 and 2016 than in 2013 due to the higher level of excitement among UM football fans. We replicated the methods used in the 2013 study. Given the timescale for this study, the relevant T4Q area is proximate causation. Displays of allegiance are likely related to both the level of enthusiasm for the coalition and the prospects of winning in inter-group competition.

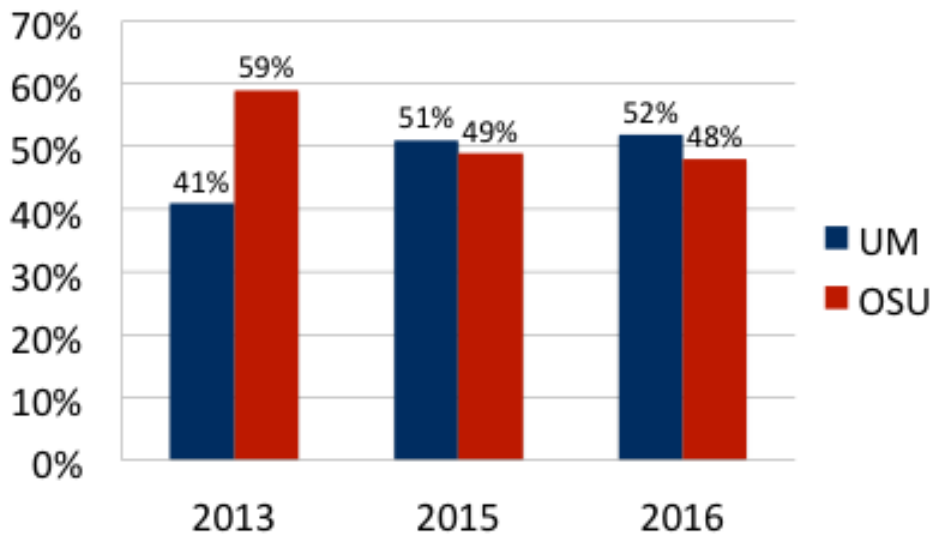
## **METHODS**

The research team conducted observations at a popular indoor shopping mall in Toledo, Ohio during the Fall 2015 and Fall 2016 collegiate football seasons on weekend afternoons when both Ohio State and Michigan were playing games. This was the location where most (69%) of the individuals in the 2013 study were observed. Observers also conducted a smaller proportion of observations in other public shopping locations, consistent with previous years. There were 1327 individuals observed in 2015 and 1582 individuals observed in 2016.

For each observation, the team walked one circuit of the mall's open corridors. Coding research team members counted the total number of individuals by gender and approximate age group (under typical undergraduate age, typical undergraduate age (18-24 years old), over typical undergraduate age). For each individual, the team noted whether they wore apparel or merchandise displaying affiliation to UM, OSU, another university of college, or no such apparel. On days when the malls were too crowded to record the observation of every passerby, individuals were counted only when it was possible to determine what affiliation they displayed (if any).

## **RESULTS**

In 2013, a significantly greater proportion of individuals were wearing Ohio State University merchandise (OSU: 59%) than University of Michigan merchandise (UM: 41%),  $\chi^2_{(1)} = 5.76, p = .002$ . The 2015 difference in proportions (UM: 51%, OSU: 49%) was not significant,  $\chi^2_{(1)} = 0.05, p = .831$ . The 2016 difference in proportions (UM: 52%, OSU: 48%) was also not significant,  $\chi^2_{(1)} = 0.21, p = .643$ , and the 2015 and 2016 proportions did not differ from each other,  $\chi^2_{(1)} = 0.01, p = .944$ . There was a statistically significant difference between the proportions in 2013 and 2015-2016,  $\chi^2_{(1)} = 4.64, p = .031$ .



**Figure 1:** Relative proportions of individuals wearing merchandise displaying allegiance to the University of Michigan (UM) and Ohio State University (OSU).

## DISCUSSION

As predicted, observations documented an increase in the proportion of individuals displaying University of Michigan items relative to the proportion of individuals displaying Ohio State items in a city with divided loyalty after the installment of Jim Harbaugh as the new head coach of the University of Michigan football team. This pattern indicates a revitalization of the “Border Battle” and an increase in enthusiasm in the University of Michigan football fan base in the Toledo area. Our results are consistent with similar patterns seen in university student populations in response to team victories, though in this case the increased displays of loyalty are attributed in part to enthusiasm that preceded actual game victories. Group loyalty may be one of the most important products of socialization and thus is highly salient (Bogardus, 1924). Identification with



a favored sports team provides a sense of belonging in an age when many traditional social institutions have declined in importance (Branscombe & Wann, 1991).

We believe that our results are more likely due to behavioral changes in existing University of Michigan fans rather than previous fans of Ohio State changing allegiance. Changing allegiance between two rival teams based on team success is not common (Richardson & O'Dwyer, 2003). Discussions with residents in the Toledo area indicated that team loyalty in the UM-OSU rivalry was considered a serious issue and changes in loyalty would be seen as a violation of principle. An owner of the Buckeye Wolverine Shop revealed several examples where fans attempted to avoid "contamination" by the rival team's merchandise (personal communication with author, October 2016). These behaviors included avoiding walking in the section for the rival team's branded merchandise, jumping over floor space painted with rival team colors, and handling rival team merchandise (when purchasing the items for a friend or family member) with a plastic bag as if picking up dog feces. It is also possible that our results partially represent the creation of new University of Michigan fans who were not previously aligned.

### ***Limitations***

We did not interview any individuals regarding their team loyalties, thus we are unable to determine the proportion of the increase in displays of University of Michigan merchandise due to greater enthusiasm among previous fans versus a greater number of fans relative to previous years. Our observations document the ambient level of support for each team. We assessed one indicator of the level of allegiance expressed to each team. Other forms of evidence would include the number of individuals watching games (at the game, in a viewing at a public location, and at home), the amount of merchandise purchased, and self-reports of team affiliations.

### ***Conclusion***

Our results advance understanding of coalitional psychology and behaviors related to sports team rivalries. The proportion of individuals making public displays of team allegiance is likely a function of the quantity of fans in an area, their level of enthusiasm, and the anticipated prospects of winning competitions, and the actual outcomes of competitions. We demonstrate that displays of allegiance increased following the selection of a new leader with a historical record of success.

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### **ETHICAL STATEMENT**

These studies were approved by the Institutional Review Board for Health Sciences and Behavioral Sciences at the University of Michigan [HUM00083331].

## REFERENCES

- Alexander, R.D. (1979). *Darwinism and human affairs*. Seattle: University of Washington Press.
- Balliet, D., Wu, J., & De Dreu, C. K. (2014). Ingroup favoritism in cooperation: A meta-analysis. *Psychological Bulletin*, 140, 1556–1581. [DOI](#)
- Bernhard, H., Fischbacher, U., and Fehr, E. (2006). Parochial altruism in humans. *Nature*, 442, 912- 915. [DOI](#)
- Billig, M. & Tajfel, H. (1973). Social categorization and similarity in intergroup behavior. *European Journal of Social Psychology*, 3(1), 37-52. [DOI](#)
- Boehm, C. (1999). *Hierarchy in the forest*. London: Harvard University Press.
- Bogardus, E. S. (1924). *Fundamentals of Social Psychology*. New York: Century.
- Branscombe, N. R., Wann, D. L., Noel, J. G., & Coleman, J. (1993). In-group or out-group extremity: Importance of the threatened social identity. *Personality and Social Psychology Bulletin*, 19(4), 381-388. [DOI](#)
- Branscombe, N.R., & Wann, D.L. (1991). The positive social and self-concept consequences of sports team identification. *Journal of Sport and Social Issues*, 15(2), 115-117. [DOI](#)
- Brewer, M.B. (1979). In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin*, 86(2), 307–324. [DOI](#)
- Chalik, L., & Rhodes, M. (2014). Preschoolers use social allegiances to predict behavior. *Journal of Cognition and Development*, 15(1), 136–160. [DOI](#)
- Cialdini, R. B., Borden, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, L. R. (1976). Basking in reflected glory: Three (football) field studies. *Journal of Personality and Social Psychology*, 34(3), 366-375. [DOI](#)
- Crowther, N.B. (2007). *Sport in ancient times*. Westport, CT: Praeger.
- Deaner, R. O., Balish, S. M., & Lombardo, M. P. (2016). Sex differences in sports interest and motivation: An evolutionary perspective. *Evolutionary Behavioral Sciences*, 10(2), 73–97. [DOI](#)
- DeScioli, P., & Kurzban, R. (2009). Mysteries of morality. *Cognition*, 112(2), 281–299. [DOI](#)
- Divale, W.T. (1973). *Warfare in primitive societies: a bibliography*. Santa Barbara, CA: Clio Press.
- Durham, W.H. (1979). Towards a coevolutionary theory of human biology and culture. In: N.A. Chagnon & W. Irons (Eds.), *Evolutionary biology and human social behavior: an anthropological perspective* (pp. 39–58). North Scituate, MA: Duxbury Press.
- End C. M., Dietz-Uhler B., Harrick E. A., Jacquemotte L. (2002). Identifying with winners: A reexamination of sport fans' tendency to BIRG. *Journal of Applied Social Psychology*, 32(5), 1017–1030. [DOI](#)
- Ghiglieri, M.P. (1999). *The dark side of man: tracing the origins of male violence*. Reading, MA: Perseus Books.
- Goette, L., Huffman, D., Meier, S., & Sutter, M. (2010). *Group membership, competition, and altruistic versus antisocial punishment: Evidence from randomly assigned army groups*. Available at SSRN: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1682710](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682710)
- Gold, J. R. (1982). Territoriality and human spatial behaviour. *Progress in Human Geography*, 6(1), 44-67. [DOI](#)
- Goodall, J. (1990). *Through a window: My thirty years with the chimpanzees of Gombe*. Boston, MA: Houghton Mifflin.
- Halevy, N., Weisel, O., & Bornstein, G. (2011). “In-group love” and “out-group hate” in repeated interaction between groups. *Journal of Behavioral Decision Making*, 25(2), 188–195. [DOI](#)

- Jordan, J.J., Katherine McAuliffe, K., & Warneken, F. (2014). Development of in-group favoritism in children's third-party punishment of selfishness. *Proceedings of the National Academy of Sciences of the United States of America*, 111, 12710-12715. [DOI](#)
- Keeley, L. (1996). *War before Civilization*. New York: Oxford University Press.
- Kelly, D. J., Quinn, P. C., Slater, A. M., Lee, K., Gibson, A., Smith, M., Ge, L., & Pascalis, O. (2005). Three-month-olds, but not newborns, prefer own-race faces. *Developmental Science*, 8(6), F31-F36. [DOI](#)
- Kenrick, D.T., Li, N.P., & Butner, J. (2003). Dynamical evolutionary psychology: Individual decision rules and emergent social norms. *Psychological Review*, 110(1), 3–28. [DOI](#)
- King, R. D., & Wheelock, D. (2007). Group threat and social control: Race, perceptions of minorities and the desire to punish. *Social Forces*, 85(3), 1255–1280. [DOI](#)
- Kinzler, K.D., Dupoux, E., & Spelke, E.S. (2007). The native language of social cognition. *Proceedings of the National Academy of Sciences*, 104(30), 12577-12580. [DOI](#)
- Kruger, D.J., & Kruger, J.S. (2015). An ethological assessment of allegiance to rival universities in an intermediate city. *Human Ethology Bulletin*, 30, 21-29.
- Kruger, D.J., Wang, X. T., and Wilke, A. (2007). Towards the development of an evolutionarily valid domain-specific risk-taking scale. *Evolutionary Psychology*, 5(3), 570-583. [DOI](#)
- Kurzban, R., & Leary, M.R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, 127(2), 187–208. [DOI](#)
- Lieberman, D., & Linke, L. (2007). The effect of social category on third party punishment. *Evolutionary Psychology*, 5(2), 289–305. [DOI](#)
- Lindquist, D. C. (2006). "Locating" the nation: Football game day and American dreams in central Ohio. *Journal of American Folklore*, 119(474), 444-488. [DOI](#)
- Low, B.S. (1993). An evolutionary perspective on war. In W. Zimmerman & H.K. Jacobson (Eds.), *Behavior, culture, and conflict in world politics* (pp.13–56). Ann Arbor, MI: University of Michigan Press.
- Mahajan, N., & Wynn, K. (2012). Origins of “Us” versus “Them”: Prelinguistic infants prefer similar others. *Cognition*, 124(2), 227-233. [DOI](#)
- Makimura, Y., & Yamagishi, T. (2003). Ongoing group interaction, in- group favoritism, and reward allocation. *The Japanese Journal of Psychology*, 73(6), 488–493. [DOI](#)
- Manson, J.H., & Wrangham, R.W. (1991). Intergroup aggression in chimpanzees and humans. *Current Anthropology*, 32(4), 369–77. [DOI](#)
- Manzullo, B. (2014, December 30). *Bank of Ann Arbor unleashes Jim Harbaugh billboards*. Detroit Free Press. Retrieved from <http://www.freep.com/story/sports/college/university-michigan/wolverines/2014/12/30/jim-harbaugh-ann-arbor/21042623/>
- Misch, A., Over, H., & Carpenter, M. (2014). Stick with your group: young children's attitudes about group loyalty. *Journal of Experimental Child Psychology*, 126, 19-36. [DOI](#)
- Misch, A., Over, H., & Carpenter, M. (2016). I won't tell: Young children show loyalty to their group by keeping group secrets. *Journal of Experimental Child Psychology*, 126, 19-36. [DOI](#)
- Mitani, J. C., Watts, D. P., & Amsler, S. J. (2010). Lethal intergroup aggression leads to territorial expansion in wild chimpanzees. *Current Biology*, 20(12), R507-508. [DOI](#)
- Ostrom, T.M., and Sedikides, C. (1992). Outgroup homogeneity effects in natural and minimal groups. *Psychological Bulletin*, 112(3), 536–552. [DOI](#)
- Patterson, M. M., & Bigler, R. S. (2006). Preschool children's attention to environmental messages about groups: Social categorization and the origins of intergroup bias. *Child Development*, 77(4), 847–860. [DOI](#)

- Richerson, P.J., & Boyd, R. (2001). The evolution of subjective commitment to groups: A tribal instincts hypothesis. In R. M. Nesse (Ed.), *Evolution and the capacity for commitment* (pp. 186–220). New York, NY: Russell Sage Foundation.
- Richardson, B., & O'Dwyer, E. (2003). Football supporters and football team brands: A study in consumer brand loyalty. *Irish Marketing Review*, 16, 43-52.
- Ruffle, B.J., & Sosis, R. (2006). Cooperation and the in-group-out-group bias: A field test on Israeli kibbutz members and city residents. *Journal of Economic Behavior and Organization*, 60(2), 147- 163. [DOI](#)
- Scalise Sugiyama, M., Mendoza, M., & White, F. (2016, June). *Assembling the CIA module: Coalitional play fighting in forager societies*. Poster presented at the annual meetings of the Human Behavior and Evolution Society, Vancouver, BC.
- Schaller, M., Park, J.H., & Faulkner, J. (2003). Prehistoric dangers and contemporary prejudices. *European Review of Social Psychology*, 14(1), 105–137. [DOI](#)
- Schiller, B., Baumgartner, T., & Knoch, D. (2014). Intergroup bias in third-party punishment stems from both ingroup favoritism and outgroup discrimination. *Evolution and Human Behavior*, 35(3), 169–175. [DOI](#)
- Schlabach, M. (2015, November 23). *Harbaugh's '86 victory guarantee still strikes a nerve at Ohio State*. *Entertainment and Sports Programming Network*. Retrieved from <http://abcnews.go.com/Sports/harbaughs-86-victory-guarantee-strikes-nerve-ohio-state/story?id=35373181>
- Sherif, M. (1966). *In common predicament: Social psychology of intergroup conflict and cooperation*. Boston, MA: Houghton Mifflin.
- Sherif, M., Harvey, O.J., White, B.J., Hood, W.R., & Sherif, C.W. (1961). *Intergroup conflict and cooperation: The Robbers Cave experiment*. Norman, OK: University Book Exchange.
- Symons, D. (1978). *Play and aggression: A study of Rhesus monkeys*. New York: Columbia University Press.
- Tajfel, H., & Turner, J.C. (1979). An integrative theory of intergroup conflict. In W.G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Monterey, CA: Brooks/Cole.
- Tinbergen, N. (1957). The functions of territory. *Bird Study*, 4, 14-27. [DOI](#)
- Tinbergen, N. (1963). On aims and methods in ethology. *Zeitschrift für Tierpsychologie*, 20, 410–433. [DOI](#)
- Toledo City Paper. (2016, October 19). *Art notes: Border battle hits canvas*. Toledo City Paper, 19, 32.
- Tooby, J., & Cosmides, L. (1988). The evolution of war and its cognitive foundations. *Institute for Evolutionary Studies Technical Report*, 88-1.
- Tooby, J., & Cosmides, L. (2010). Groups in mind: the coalitional roots of war and morality. In H. Høgh-Olesen (Ed.), *Human morality and sociality: Evolutionary and comparative perspectives* (pp. 91-234). Palgrave-Macmillan.
- Trail, G.T., Fink, J.S. & Anderson, D.F. (2003). Sport spectator consumption behavior. *Sport Marketing Quarterly*, 12, 8-17.
- Trice, H. M., and Beyer, J. M. (1984). Studying organizational culture through rites and ceremonials. *Academy of Management Review*, 9(4), 653-669. [DOI](#)
- Turney-High, H.H. (1949/1971). *Primitive war: its practice and concepts*. Columbia, SC: University of South Carolina Press.
- Van der Dennen, J.M.G. (1998). The politics of peace in preindustrial societies: the adaptive rationale behind corroboree and calumet. In I. Eibl-Eibesfeldt & F.K. Salter (Eds.), *Indoctrinability, ideology and warfare: evolutionary perspectives* (pp. 151–185). New York: Berghahn Books.

- Van der Dennen, J.M.G. (1999). Of badges, bonds and boundaries: in-group/out-group differentiation and ethnic conflict revisited. In: K. Thienpont & R. Cliquet (Eds.), *In-group/out-group behaviour in modern societies: an evolutionary perspective* (pp. 37–74). Brussels: NIDI/GBGS Publications.
- Van der Dennen, J.M.G. (2002). Evolutionary theories of warfare in preindustrial foraging societies. *Neuroendocrinology Letters*, 23, (supplement 4), 55–65.
- Wann, D. L. (2006). Understanding the positive social psychological benefits of sport team identification: The team identification-social psychological health model. *Group Dynamics*, 10(4), 272–296. [DOI](#)
- Wann, D. L., Haynes, G., McLean, B., & Pullen, P. (2003). Sport team identification and willingness to consider anonymous acts of hostile aggression. *Aggressive Behavior*, 29(5), 406 – 413. [DOI](#)
- Waxman, S., & Booth, A. (2003). The origins and evolution of links between word learning and conceptual organization: New evidence from 11-month-olds. *Developmental Science*, 6(2), 128-135. [DOI](#)
- Waxman, S. R., & Markow, D. B. (1998). Object properties and object kind: Twenty-one-month old infants' extension of novel adjectives. *Child Development*, 69(5), 1313-1329. [DOI](#)
- Wetherell, M. (1982). Cross-cultural studies of minimal groups: Implications for the social identity theory of intergroup relations. In H. Tajfel (ed.), *Social identity and intergroup relations* (pp. 207–240). Cambridge, UK: Cambridge University Press.
- Wilkerson, S. J. (1991). Then they were sacrificed: The ritual ballgame of Northeastern Mesoamerica through time and space. In V. Scarborough and D. R. Wilcox. *The Mesoamerican Ballgame* (pp. 129-144). Tucson, AZ: University of Arizona Press.
- Wilson, M. L., & Wrangham, R. W. (2003). Intergroup relations in chimpanzees. *Annual Review of Anthropology*, 32, 363-392. [DOI](#)
- Winegard, B., & Deaner, R. O. (2010). The evolutionary significance of Red Sox nation: Sport fandom as a by-product of coalitional psychology. *Evolutionary Psychology*, 8(3), 432–446. [DOI](#)
- Wrangham, R. & Peterson, D. (1996). *Demonic males: Apes and the origins of human violence*. Boston, MA: Houghton Mifflin.
- Yamagishi, T., Jin, N., & Kiyonari, T. (1999). Bounded generalized reciprocity: Ingroup boasting and ingroup favoritism. *Advances in Group Processes*, 16, 161–197.
- Yamagishi, T., & Kiyonari, T. (2000). The group as the container of generalized reciprocity. *Social Psychology Quarterly*, 63(2), 116–132. [DOI](#)
- Zillmann, D., Bryant, J., & Sapolsky, B. S. (1989). Enjoyment from sports spectatorship. *Sports, games, and play: Social and psychological viewpoints*, 2, 241-278.