Summer 2016

Do Family Relationships Affect Team Performance?

Erick P. Briggs

DO FAMILY RELATIONSHIPS AFFECT TEAM PERFORMANCE?

A Masters Thesis

Presented to

The Graduate College of

Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Psychology

By

Erick Briggs

July 2016

DO FAMILY RELATIONSHIPS AFFECT TEAM PERFORMANCE?

Psychology

Missouri State University, August 2016

Master of Science

Erick Briggs

ABSTRACT

Nepotism refers to the practice of giving preferential treatment to family members and is prohibited in some work organizations. Common anti-nepotism policies are often based on the unsubstantiated assumption that family relationships negatively affect performance. This study challenges this assumption with the hypothesis that family relationships improve team performance. The theoretical basis for this hypothesis is grounded in the literature examining team processes. Research suggests that coordination is an important team process, and that family members coordinate more effectively than non-family members. Thus, it is reasonable to suspect that familial relationships in teams will lead to better – rather than worse team performance. To test this hypothesis, over 100 years of performance data from 477 men's college basketball teams were analyzed. Results suggest that familial relationships in teams is positively related to better team performance.

KEYWORDS: team performance, family relationships, coordination, nepotism, organizational policy, selection, basketball

This abstract is approved as to form and content

____

Robert G. Jones, PhD
Chairperson, Advisory Committee
Missouri State University

DO FAMILY RELATIONSHIPS AFFECT

TEAM PERFORMANCE?

By

Erick Briggs

A Masters Thesis
Submitted to the Graduate College
Of Missouri State University
In Partial Fulfillment of the Requirements
For the Degree of Master of Science, Psychology

July 2016

Approved:

____
Robert G. Jones, PhD

____
Donald L. Fischer, PhD

____
Michele D. Smith, PhD

____
Julie Masterson, PhD: Dean, Graduate College

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Common anti-nepotism policies are based on the unsubstantiated assumption that familial relationships negatively affect certain group processes. This study will challenge this assumption and examine whether team performance is affected by familial relationships. The findings from this study will be used to address a fundamental question regarding nepotism in work organizations: Do nepotistic relationships in the workplace affect team performance?

Nepotism

Nepotism refers to the practice of giving preferential treatment to family members, and is prohibited in some work organizations. For example, many organizations (e.g. Pizza Hut, Wal-Mart, etc.) have policies that prohibit supervisor-subordinate relationships between relatives, including spouses, parents, siblings and offspring. Similarly, the U.S. Merit Systems Protection Board (MSPB Reports, 2012) has established policies prohibiting public officials from appointing, employing, promoting, or recommending family members. However, there are many examples in politics, entertainment, and sports where familial relationships are common and even accepted in work organizations (Bellow, 2003). Thus, nepotism does exist but it remains to be seen whether anti-nepotism policies are justified.

Nepotism policies are essentially selection devices which have received little research attention. The legal issues surrounding the use of nepotism policies as selection devices have been highlighted on several occasions (Gutman, 2012; Jones et al., 2008).

Both policies that prohibit and promote nepotism have been tested in court cases (Gutman, 2012). In one such case, an anti-nepotism policy led to disparate treatment against women in an organization that prohibited spousal hiring (*EEOC v. Rath Packing Company,* 1986). Ultimately, the court reasoned that the organization's anti-nepotism policies should have been based on the actual effects of nepotism and not perceptions (Gutman, 2012). Such cases provide examples of policies that act as troublesome, un-validated selection devices (Jones et al., 2008).

The potential problems associated with familial relationships in the workplace may have contributed to the creation of anti-nepotism policies. Nepotistic relationships may foster perceptions of injustice, increased stress, and decreased job satisfaction (Arsali & Tumer, 2008). Contrarily, some researchers have presented family-workplace relationships in a positive light. For instance, some research suggests the growing number of dual-career couples are benefiting from more positive work-life balance (Werbel & Hames, 1996). Other research suggests familial relationships may foster a more productive organizational culture (Dension, Lief, & Ward, 2004) and increase employee accountability (Gordon & Nicholson, 2008). In addition, the presence of familial relationships in organizations has been associated with increased commitment, cohesion, and longer-term orientation (Vallejo, 2008). There is also some evidence that perceptions of organizational fairness can both be enhanced (Woolsey, 2014; Laker & Williams, 2003) and diminished (Darioly & Riggio, 2014) by perceived nepotism.

While prior studies have examined perceived nepotism as a predictor of perceptions (e.g. commitment, satisfaction, justice), the present study will examine the actual link between familial relationships and performance. This will provide organizational decision makers a further basis from which to consider nepotism policies.

A Group Phenomenon

Nepotism preferences rely on at least a dyadic interaction. So, by definition, nepotism is a group phenomenon. In order to understand the effects of nepotism on performance, we need to understand the effect it may have at the group level.

While several definitions for work groups have been proposed, this study will adopt a definition which delineates the differences between task forces, crews, and teams. This distinction is based on tasks, tools, and members (Jones, Stevens, & Fischer, 1999). Task forces are defined by tasks, and typically disband when the defined tasks are completed. For example, governmental task forces have been formed to address natural disasters, terrorist attacks, and drug problems. The work of crews is defined by the tools used to accomplish tasks. In tank crews for instance (Tibbetts, 1995; Tziner & Vardi, 1983), roles are defined by the machinery crew members use (i.e. loader, driver, gunner, spotter, tank commander). Crew members are interchangeable and their ongoing tasks are defined by the procedural tools used (Jones et al., 1999). Teams are denoted by complex interdependencies among *members*. Membership boundaries and tasks are carried out through the use of skills.

Group Processes

There is a large body of literature examining factors that affect team performance. Two important factors are collaboration and coordination. Collaboration has been defined as individuals working together toward a common goal that is beyond what a single party can reach alone (Forest, 2003), and has been cited as one of the main contributors to the success of our species (Melis, 2013). Coordination, a form of organized collaboration, has been described as real-time behavioral processes unfolding as humans interact (Gorman, Amazeen, & Cooke, 2010; Kolbe & Boos, 2009). Coordination has also been described as the effective alignment and utilization of individual actions (Gulati, Wohlgezogen, & Zhelyazkov, 2012) manifested as a shared understanding of behavioral cues that align each partner's expectations (Mehta, Starmer, & Sugden, 1994).

Research suggests that collaboration and coordination are important processes for understanding group performance. For instance, one study highlighted the criticality of effective collaboration and coordination within the context of military units (Salas, Cooke, and Gorman, 2010). A similar study suggests that the use of collaborative tools has a positive influence on team performance (Hidayanto & Setyady, 2014). Moreover, face-to-face collaboration facilitates development of shared mental models (Andres, 2011), which generally enhance performance (Klimoski & Mohammed, 1994).

In addition to shared mental models, there is a growing literature on recognition of expertise, and its importance to group effectiveness (Baumann & Bonner, 2013; Bonner, 2004; Littlepage & Mueller, 1997). A substantive collection of literature also exists examining other important group process variables such as backup behaviors and mutual trust (Salas, Goodwin, & Burke, 2009). For purposes of this study, these processes will be classified as behavioral markers of coordination.

Recognition of expertise refers to the process in which group members develop an understanding of the different knowledge bases and skill sets possessed by different group members (Ho & Wong, 2009). Backup behaviors are defined as "the ability to anticipate other team member's needs through accurate knowledge about their responsibilities" (Salas et al., 2009). Over time, team members foster interaction and form expectations of one another's behavior (Jones et al., 1999) which form the basis for the knowledge structures often referred to as shared mental models (Cannon-Bowers, Salas, & Converse, 1993). Basketball teams are one example of team structures in which shared mental models among members govern coordination (i.e. mutuality and awareness) when overt communication is difficult (Gershgoren, 2013; Bourbousson, Poizat, Saury, & Seve, 2010).

Collaboration, Coordination, and Familial Relationships

Early in life, family interactions present individuals with their first opportunities to engage in collaboration and coordination. Thus, the family unit may be thought of as the first group where most individuals learn collaboration and coordination.

Two studies suggest that coordination is more effective among family members compared to non-family members. One study (Segal, McGuire, Miller, & Havlena, 2008) compared tacit coordination (coordination when communication is not possible) displayed by twin siblings with that of non-related pairs of individuals. It was hypothesized that twin siblings would exhibit more effective tacit communication based on the "greater resemblance in mental abilities, information processing strategies, and temperamental dispositions." The findings were consistent with the hypothesis: monozygotic twins showed greater coordination than did either dizygotic twins or other matched pairs (Segal et al., 2008).

Family members may also be more aware of one another's strengths and weaknesses in performing a group task (recognition of expertise). For example, a study on family firms in China suggests that *guanxi,* a type of social capital related to familial relations, is associated with easier transfer of tacit knowledge (Su & Carney, 2013).

Hypotheses

Based on the existing literature, it is reasonable to suspect that familial relationships in teams will lead to better –rather than worse team performance. In the current study, college basketball teams will be used for hypothesis testing. There are known familial relationships in basketball teams which allow for testing the effects of familial relationships on team performance. In addition, the effect of the different types of familial relationships will be tested in an exploratory manner. The following hypotheses are proposed:

Hypothesis 1: Team performance is expected to be positively related to the presence of familial relationships in teams.

Hypothesis 2: Team processes are expected to be positively related the presence of familial relationships in teams.

Hypothesis 3: Team processes are expected to mediate the relationship between familial relationships in teams and team performance.

METHODS

Overview

Based on the definition of teams offered above (Jones et al., 1999), college basketball is a team sport. To test the hypotheses, archival data were gathered from performance records of National Collegiate Athletic Association (NCAA) DI men's basketball teams. These data included performance metrics, records of familial relationships on teams, and team process measures, all of which will be described in greater detail below.

Measures

Team performance will be assessed using Win/Loss Percentage, NCAA Tournament Berths, Final Four Appearances, and National Championship Wins.

The documented team-family relationships all consist of fathers, sons, and brothers. These relationships were analyzed in two ways. First, an overall analysis of familial relationships (regardless of type) was used. Familial relationships were measured by frequency (i.e. two family members = one relationship, three family members = three relationships). Relationships among players, among coaching staff, and between players and coaching staff were all included in this variable. Separate analyses were also conducted on these familial relationship types, coded as Coach-Coach, Player-Player, and Coach-Player.

Self-report measures of recognition of expertise, shared mental models, and back-up behaviors are unavailable in this archival dataset. However, there are certain metrics that may be indicative of some of these group processes. For instance, Assist/Turnover Ratio and Offensive Rebound Percentage may represent recognition of expertise on offense. An assist is recorded when a player completes a pass to another player who scores shortly after. A turnover is recorded when a player's action grants the opposing team a possession (via rule violation, passing the ball to an opponent, etc.). Assist/Turnover Ratio is calculated by dividing the team's total number of assists by their total number of turnovers. As players spend more time interacting, they become more familiar with the strengths, weaknesses, and tendencies of each other. This recognition of expertise (i.e. coordination) is expected to theoretically lead to more complete passes (leading to scores) and less incomplete passes (leading to turnovers), as individuals more accurately predict each other's behavior (e.g. spacing, movement, speed, and preferred shooting area). Ideally, passing turnovers would be used instead of general turnovers (which include rule violations) but this metric was unavailable.

Recognition of expertise was also assessed using Offensive Rebound Percentage. An offensive rebound is recorded when a player takes possession of the ball after a shot is missed by a member of his own team. A defensive rebound is recorded when a player takes possession of the ball after a shot is missed by a member of the opposing team. Part of securing a rebound is anticipating not only whether a shot will be missed but also how a shot will be missed (e.g. the trajectory the ball might take after it bounces off the rim), which is often a function of the shot's characteristics (e.g. distance and arc). For example, a missed shot attempted from a greater distance will often bounce off the rim with more force and will take a faster trajectory. Similarly, a missed shot attempted with more arc (height of the ball's parabola vertex) will often bounce off the rim with more force and will take on a trajectory with more height. Over time, team members are expected to more accurately predict the rebound trajectory of the shots their team members miss based on the shooter's tendencies.

In addition, Steals and Blocks are used as indicators of backup behaviors. A steal is recorded when a defensive player takes possession of the ball from an offensive player (not as a result of a rule violation). A block is recorded when a defensive player deflects the shot attempt of an offensive player. Defensive players often record blocks while assisting team members (backup behaviors) who are in disadvantageous positions. For example, a team member who lets an offensive player get too close to the rim will often be helped by a fellow team member, who may be able to block the offensive player's shot. Similarly, defensive players often record steals when they provide defensive support for fellow team members. Ideally, cross-positional steals and cross-positional blocks would be analyzed, but these metrics were unavailable.

Like backup behaviors, shared mental models may be represented by behaviors on defense. An example of a shared mental model is a shared defensive plan among players. This was assessed using Opponent Points as an index. Opponent Points refers to the number of points an opposing team scores. Team members typically share a mental model of defense which guides behavior. For example, in some defensive models, each defensive player is responsible for defending an offensive player. In other defensive models, each defensive player is responsible for defending a specific area of the court, and whichever offensive player occupies that area. Defensive models also dictate how defensive players will react to certain situations, such as specific offensive plays, or movements by specific players. Theoretically, the more effective defensive models will lead to fewer points scored by the opposing team. Since familial relationships are thought to lead to greater coordination, they should be negatively related to Opponent Points.

Initially, Points Differential (Opponent Points subtracted from the number of scored points) was used as the shared mental model index, in order to control for the effect of the game pace (i.e. a faster pace leads to more possessions for the opposing team and thus, more opportunities to score). However, Points Differential was found to have a collinear relationship with Win/Loss Percentage, $r(322) = .98$, $p < .001$ and was excluded from further analysis. The following model (Figure 1) summarizes the measures used in this study:

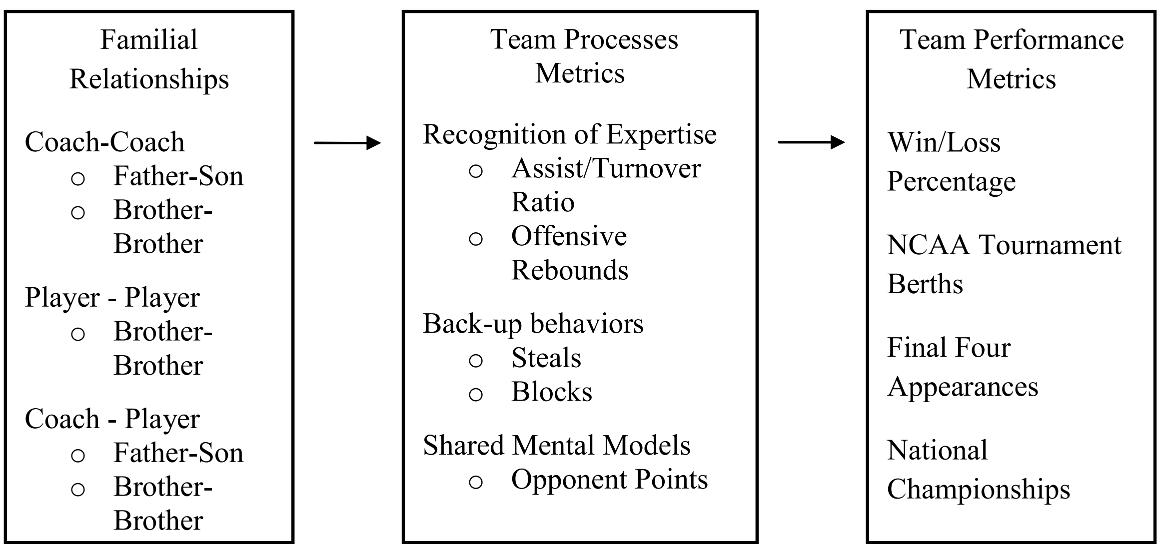

Figure 1. Measures of familial relationships, process, and performance

Samples

Records of documented familial relationships between players and coaches were obtained from the NCAA, and were used as a starting point for data collection. Online sources (e.g. sports-reference.com, Wikipedia, team websites) were used to verify data and search for other familial relationships within teams. From 1925 to 2015, 499 documented familial relationships were found. The average number of familial relationships per season was calculated for the analyses. Team performance data were obtained from NCAA Men's DI Basketball archives and sports-reference.com archives.

However, not all metrics were available for the same time period. The dataset was grouped into two subsets. The first subset includes all available data, and the second subset spans two different time periods. Two additional time periods (1997 to 2015 and 2002 to 2015) were excluded. Results from these time periods mirrored results from Sample C.

The first sample (Sample A) is comprised of 477 teams. This sample includes performance metrics (e.g. Win/Loss Percentage, NCAA Tournament Berths, Final Four Appearances, and National Championships) from seasons 1893 to 2015. This sample also includes any team with at least one NCAA DI season recorded. There are 499 documented familial relationships from 1925 to 2015 in this sample, which represents all of the family relationships found.

The second sample is comprised of 324 teams across two different time periods (Sample B and Sample C). Sample B includes seasons ranging from 1960 to 2015. This time period was selected in order to reduce the potential effect of non-random missing data (e.g. lack of reporting familial relationships during earlier seasons). Using this time period, 91.7% of the documented familial relationships were retained. After excluding any teams whose only active seasons ranged from 1893 to 1959, two selection criteria were used for the remaining sample: teams still active (as of 2015) and teams with at least 10 active seasons between 1960 to 2015. With these criteria applied, the selected sample is comprised of 324 teams with 447 family relationships. Win/Loss Percentage from seasons 1960 to 2015 was the only performance metric used for this sample.

Sample C was used to analyze both team performance and team process metrics and is comprised of the same 324 teams used in the Sample B. Sample C spanned seasons ranging from 2010 to 2015 with 67 documented family relationships, and includes the following measures: Opponent Points, Steals, Blocks, Assist/Turnover Ratio, and Offensive Rebound Percentage. Table 1 describes the characteristics of each sample.

Table 1. Variable details of each sample

Sample	Teams	Seasons Included	Family Relationships	Team Performance and Team Process Metrics
A	477	1893 - 2015	499	• Win/Loss Percentage • NCAA Tournament Berths • Final Four Appearances • National Championships
B	324	1960 - 2015	447	• Win/Loss Percentage
C	324	2010 - 2015	67	• Win/Loss Percentage • Opponent Points • Steals • Blocks • Assist/Turnover Ratio • Offensive Rebounds

RESULTS

Statistical analyses were conducted using IBM SPSS (Version 22). Descriptive statistics and correlations for Sample A, Sample B, and Sample C are described in Tables 2, 3, and 4, respectively.

Hypothesis 1 was tested using all metrics from Samples A and B, and Win/Loss percentage from Sample C. Results generally support Hypothesis 1. Significant, positive correlations were found between familial relationships and five performance metrics. MANOVA results suggest a significant effect of familial relationships on performance in Sample A, *Wilks'* $\lambda = .04$, $F(360, 1210) = 4.39$, $p < .001$, $\eta_p^2 = .57$.

Significant, positive correlations were found between Coach-Coach relationships and two performance metrics (NCAA Tournament Berths and Final Four Appearances). MANOVA results suggest a significant effect of Coach-Coach relationships on a composite of metrics in Sample A, *Wilks'* $\lambda = .68$, $F(52, 1470) = 2.94$, $p < .001$, $\eta_p^2 = .09$.

Player-Player relationships were most strongly related to better team performance. Significant, positive correlations were found between Player-Player relationships and five performance metrics. MANOVA results suggest a significant effect of Player-Player relationships on a composite of team performance metrics in Sample A, *Wilks'* $\lambda = .07$, $F(216, 1352) = 5.84$, $p < .001$, $\eta_p^2 = .48$.

Significant, positive correlations were found between Coach-Player relationships and two performance metrics (Win/Loss Percentage in Sample B and C). MANOVA results suggest a significant effect of Coach-Player relationships on a composite of performance metrics in Sample A, *Wilks'* $\lambda = .16$, $F(196, 1372) = 4.02$, $p < .001$, $\eta_p^2 = .36$.

Table 2. Descriptive statistics and correlations (Sample A)

			Correlations							
	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1 Fam. Relations	1.05	2.91	1							
2 Coach-Coach	0.19	1.42	.39**	1						
3 Player-Player	0.36	1.14	.31**	.07	1					
4 Coach-Player	0.49	1.57	.92**	.09*	.05	1				
5 Win/Loss	0.55	0.14	−.04	.03	.01	−.05	1			
6 Tournaments	7.76	9.73	.11*	.14**	.27**	.00	.61**	1		
7 Final Four	0.78	2.33	.13**	.11*	.27**	.04	.45**	.63**	1	
8 Championships	0.19	0.91	.13**	.08	.27**	.05	.33**	.48**	.84**	1

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Table 3. Descriptive statistics and correlations (Sample B)

			Correlations				
	M	*SD*	*1*	*2*	*3*	*4*	*5*
1 Fam. Relations	1.40	3.31	1				
2 Coach-Coach	0.29	1.71	.74**	1			
3 Player-Player	0.47	1.26	.46**	.01	1		
4 Coach-Player	0.65	1.77	.81**	.37**	.16**	1	
5 Win/Loss	0.55	0.09	.24**	.08	.21**	.23**	1

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Table 4. Descriptive statistics and correlations (Sample C)

			Correlations									
	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1 Fam. Relations	0.21	0.96	1									
2 Coach-Coach	0.01	0.11	.11	1								
3 Player-Player	0.08	0.54	.75**	−.01	1							
4 Coach-Player	0.12	0.65	.84**	−.01	.29**	1						
5 Win/Loss	0.52	0.13	.21**	.06	.20**	.13*	1					
6 Opp. Points	68	3.68	−.09	−.03	−.07	−.08	−.59**	1				
7 Steals	6.48	0.84	.03	.00	.05	.01	.14*	.08	1			
8 Blocks	3.50	0.81	.12*	.00	.15**	.05	.38**	−.15**	.21**	1		
9 Assist/TO	0.99	0.15	.20**	.01	.17**	.16**	.70**	−.37**	−.07	.15**	1	
10 Off. Rebound	0.32	0.03	−.03	−.06	−.01	−.02	−.11	−.11	.44**	.21**	−.32**	1

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Hypothesis 2 was partially supported. Significant, positive correlations were found between familial relationships and two process metrics (Blocks and Assist/Turnover Ratio). MANOVA results suggest a significant effect of familial relationships on the two process metrics tested, *Wilks'* λ=.77, $F(46, 598) = 1.84$, $p = .001$, $\eta_p^2 = .12$. No significant correlations were found between Coach-Coach relationships and any of the process metrics.

Significant, positive correlations were found between Player-Player relationships and two process metrics (Blocks and Assist/Turnover Ratio). MANOVA results suggest a significant effect of Player-Player relationships on the two process metrics tested, *Wilks'* λ=.84, $F(20, 624) = 2.91$, $p < .001$, $\eta_p^2 = .09$.

Significant, positive correlations were found between Coach-Player relationships and only one process metric (Assist/Turnover Ratio). Table 4 presents the correlation statistics for each of these relationships.

Results from correlation analyses support the predicted link between familial relationships and team performance in Hypothesis, as well as the link between familial relationships and two of the five team process metrics (Blocks and Assist/Turnover Ratio) in Hypothesis 2. However, the correlation analyses used the average number of familial relationship per season, and so the problem of potential aggregation exists. Supplementary analyses were conducted using Sample C in an attempt to sidestep this problem. For these analyses, metrics were chosen based on the results of the correlation analyses. Team performance was assessed using Win/Loss Percentage, and team processes were assessed using Assist/Turnover Ratio and Blocks.

First, a paired sample t-test was conducted using Sample C, which ranged from 2010 to 2015 with 67 familial relationships across 23 teams. For each team, the metrics were averaged for the seasons in which familial relationships were present and compared to the seasons in which no familial relationships were present. Results did not support Hypothesis 1 or Hypothesis 2, as no significant mean differences were found in performance (Win/Loss Percentage) or process (Assist/Turnover Ratio and Blocks) metrics using this grouping. Table 5 presents the results from the paired sample analysis.

Table 5. Paired sample t-test statistics for familial vs. non familial seasons

	Familial Relationships		No Familial Relationships					
	M	*SD*	*M*	*SD*	*t*	*df*	*d*	*p*
Win/Loss Percentage	0.63	0.15	0.59	0.16	0.99	22	.26	.33
Assist/Turnover Ratio	1.1	0.18	1.1	0.18	−0.30	22	.00	.77
Blocks	4.0	1.16	3.9	1.16	1.0	22	.09	.32

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

A weakness of the paired sample t-test was that only 23 teams were analyzed. Data from 301 other teams were included in Sample C but could not be used in the paired sample analysis because there were no documented familial relationships in these teams for this time period. To determine whether further analyses were appropriate, the performance and process metrics were averaged for all the seasons in which familial relationships were present (i.e. the seasons of the 23 teams used in the paired sample analysis) and compared to all the seasons in which no familial relationships were present (i.e. remaining seasons from all 324 teams in Sample C). To test the differences between the two groups, a MANOVA was conducted with Win/Loss Percentage, Assist/Turnover Ratio, and Blocks entered simultaneously. Results suggest a significant effect of familial relationships on all three metrics, *Wilks'* λ=.95, $F(3, 343) = 5.89$, $p = .001$, $\eta_p^2 = .05$. Table 6 summarizes the effect of familial relationships on each metric.

Table 6. MANOVA summary for familial vs. non familial relationships

Dependent Variable	*df*	*F*	*p*	η_p^2
Win/Loss Percentage	1	15.35	< .001**	.04
Assist/Turnover Ratio	1	7.11	.008**	.02
Blocks	1	7.95	.005**	.02

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Based on the results from the MANOVA, it was appropriate to examine the effect of familial relationships on each metric using independent sample t-tests for each comparison. Results suggest that teams with familial relationships record better Win/Loss Percentages, Assist/Turnover Ratios, and a higher number of Blocks compared to teams with no familial relationships. These results add support for Hypothesis 1 and Hypothesis 2. Table 7 summarizes the descriptive statistics and group comparisons.

Table 7. Summary of independent sample t-tests

	Familial Relationships			No Familial Relationships						
	N	*M*	*SD*	*N*	*M*	*SD*	*t*	*df*	*d*	*p*
Win/Loss Percentage	23	0.63	0.15	324	0.51	0.13	3.92	345	.91	< .001**
Assist/Turnover Ratio	23	1.1	0.18	324	0.99	0.16	2.67	345	.68	.008**
Blocks	23	4.0	1.16	324	3.5	0.82	2.82	345	.59	.005**

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

To more effectively combat the aggregation problem, the next analysis did not use averages. Instead, each team in a specific year was analyzed as a distinct team (e.g. Duke from 2010 to 2015 = 6 distinct teams). Using Sample C, the 67 documented familial relationships (coded as a dichotomy - Familial Relationships/No Familial Relationships) were mapped onto 1940 distinct teams. MANOVA results suggest a significant effect of familial relationships on all three metrics tested (Win/Loss Percentage, Assist/Turnover Ratio and Blocks), *Wilks' λ*=.98, $F(3, 1936) = 13.87$, $p < .001$, $\eta_p^2 = .02$. Table 8 summarizes the MANOVA results.

Based on the MANOVA results, it was appropriate to further examine the effect of familial relationships on each of the individual metrics using independent sample t-tests for each comparison. Results add support for Hypothesis 1 and Hypothesis 2. Table 9 summarizes the descriptive statistics and comparisons between groups.

Table 8. MANOVA summary for non-aggregated metrics

Dependent Variable	*df*	*F*	*p*	η_p^2
Win/Loss Percentage	1	35.14	< .001**	.02
Assist/Turnover Ratio	1	24.19	< .001**	.01
Blocks	1	12.06	.001**	.01

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Table 9. Summary of independent sample t-tests for distinct teams

	Familial Relationships			No Familial Relationships						
	N	*M*	*SD*	*N*	*M*	*SD*	*t*	*df*	*d*	*p*
Win/Loss Percentage	55	0.65	0.17	1885	0.51	0.17	5.93	1938	.82	< .001**
Assist/Turnover Ratio	55	1.13	0.24	1885	0.99	0.20	4.92	1938	.70	< .001**
Blocks	55	4.0	1.24	1885	3.48	1.09	3.47	1938	.48	.001**

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Team performance (Win/Loss Percentage) and team process (Assist/Turnover Ratio and Blocks) metrics were also analyzed across familial relationship types (i.e. Coach-Coach, Player-Player, and Coach-Player) in an exploratory manner. The 67 documented familial relationships were mapped onto each of the 1940 distinct teams in Sample C based on relationship type. Of the 67 documented familial relationships, 18 were Player-Player relationships, 34 were Coach-Player relationships, and only two were Coach-Coach relationships. Coach-Coach relationships were excluded from analyses.

MANOVA results showed a significant main effect of relationship type on team performance and team process metrics, *Wilks' λ*=.75, $F(3, 48) = 5.37$, $p = .003$, $\eta_p^2 = .25$. An analysis of the effect of familial relationships on each individual metric revealed a significant difference for Win/Loss Percentage and Blocks, but not Assist/Turnover Ratio. Table 10 summarizes the MANOVA results.

Table 10. MANOVA summary for player-player vs. coach-player relationships

Dependent Variable	*df*	*F*	*p*	η_p^2
Win/Loss Percentage	1	6.75	.01**	.12
Assist/Turnover Ratio	1	0.01	.93	.00
Blocks	1	7.73	.008**	.13

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Based on the MANOVA results, it was appropriate to examine the effect of familial relationship type on each metric (Win/Loss Percentage and Blocks) using independent sample t-tests. Compared with teams with Coach-Player relationships, teams with Player-Player relationships report higher levels of team performance (i.e. better Win/Loss Percentage) and team process metrics (i.e. more Blocks). Table 11 summarizes the descriptive statistics and comparisons between relationship types.

Table 11. Summary of t-tests for distinct teams across relationship types

	Player-Player Relationships			Coach-Player Relationships						
	N	*M*	*SD*	*N*	*M*	*SD*	*t*	*df*	*d*	*p*
Win/Loss Percentage	18	0.73	0.14	34	0.61	0.18	2.60	50	.72	.012*
Blocks	18	4.74	1.33	34	3.79	1.07	2.78	50	.82	.008**

**. Correlation is significant at the .01 level (2-tailed).
*. Correlation is significant at the .05 level (2-tailed).

Based on the results from Hypothesis 2, Assist/Turnover Ratio and Blocks were used to test the mediation effect predicted by Hypothesis 3. Mediation analyses were conducted using the PROCESS (Version 2.15) macro for SPSS (Preacher & Hayes, 2008). The conceptual model is presented in Figure 2.

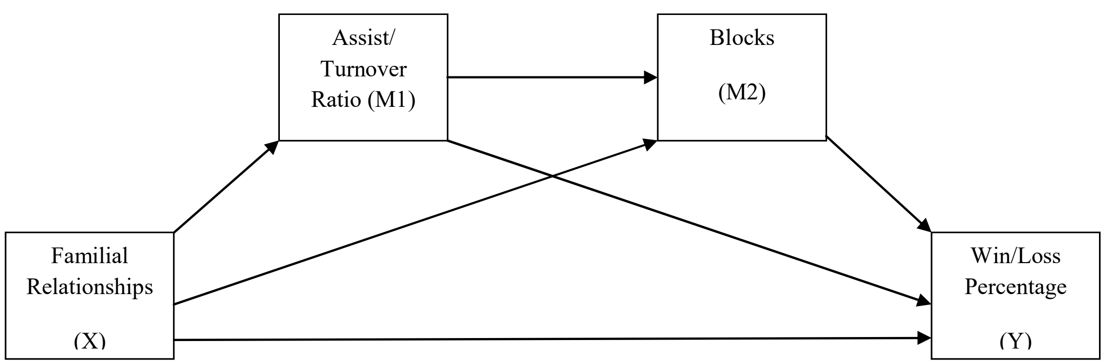

Figure 2. Conceptual model of mediation effect

Assist/Turnover Ratio was entered into the model first as it was more highly correlated with Familial Relationships (compared with Blocks). Results suggest that full mediation was found. After controlling for Assist/Turnover Ratio and Blocks, Win/Loss Percentage no longer significantly correlated with Familial Relationships. The mediation analysis is summarized in Table 12.

Table 12. Model summaries for mediation analysis

Predictor (X)	Outcome (Y)	Control (M1)	Control (M2)	*b*	*SE*	*p*	R^2
Familial Relationships	Assist/ Turnover Ratio			6.72	1.81	$< .001^{**}$	.04
Familial Relationships	Blocks	Assist/ Turnover Ratio		16.75	9.90	.092	.03
Familial Relationships	Win/Loss Percentage	Assist/ Turnover Ratio	Blocks	1.22	1.05	.25	.57

**. Significant at the .01 level (2-tailed).
*. Significant at the .05 level (2-tailed).

DISCUSSION

The relationship between familial relationships and team performance runs counter to the logic of anti-nepotism policies. Results of this study showed that on average, teams with familial relationships performed better than teams with no familial relationships. Consistent with previous research, more effective coordination is believed to be a key aspect of the superior performance outcomes. Thus, for teams whose task work relies at least partly on coordination, the familiarity that comes with familial relationships is expected to enhance team performance. The findings may be applied to live-action teams such as medical teams, military teams, emergency rescue teams, and perhaps spaceflight teams. This presents organizational decision makers with important information to consider when formulating nepotism policies.

Like most focused examinations, results also showed this relationship is more complex than it appears. Different types of familial relationships had different apparent effects on team processes. Player-Player relationships had the strongest link to better team performance, and were most strongly associated with more effective coordination (i.e. backup behaviors and recognition of expertise). In retrospect, this seems obvious, as coordination processes are presumably more salient for Player-Player relationships (i.e. individuals performing task work). Coaches do communicate, share information, and plan; but these processes are distinct from coordination, at least in a live, skill-based behavioral sense. Thus, organizational decision makers may want to consider factors such as team composition, task work, and skill requirements when formulating policies regarding the hiring of family members.

Limitations

Although a major strength of the study was analyzing a dataset that represented the entire population, there were also several limitations. Perhaps the most apparent is the all-male college-aged sample, which makes generalization to other kinds of teams in employment settings problematic. Potential under-reporting of familial relationships also poses a problem. If the actual number of family relationships in teams was greater than the relatively low base rate in this data, then the family - performance relationship may have been underestimated. This seems likely given the potential number of cousins on teams, for example. The overall effect of this might have been to attenuate, given restriction of range on the (familial relationship) predictor. Another limitation relates to statistical analyses conducted. Although these data came from a considerable time period, we did not have data that lent itself easily to longitudinal analyses. In particular, low base rates of the primary predictor variable (familial relationships) made corrections for auto-correlation difficult. Time-series effects would have provided for some cause-effect inferences.

Future Research

Future research on his topic may consider obtaining non-archival data from different types of teams and settings using analyses that will allow for cause and effect inferences. It may also be of interest to more directly measure team coordination processes, such as back up behaviors and recognition of expertise, in order to further understand the inner workings of these relationships.

REFERENCES

Andres, H. P. (2011). Shared mental model development during technology-mediated collaboration. *International Journal of E-Collaboration*, *7*(3), 14-30. doi:10.4018/IJeC.2011070102

Arasli, H., & Tumer, M. (2008). Nepotism, favoritism and cronyism: A study of their effects on job stress and job satisfaction in the banking industry of north Cyprus. *Social Behavior and Personality*, *36*(9), 1237-1250.

Baumann, M. R., & Bonner, B. L. (2013).Member awareness of expertise, information sharing, information weighting, and group decision making. *Small Group Research*, *44*(5), 532-562.doi:10.1177/1046496413494415

Bellow, A. (2003). *In praise of nepotism: A natural history / Adam Bellow*. New York: Doubleday.

Bonner, B. L. (2004). Expertise in Group Problem Solving: Recognition, Social Combination, and Performance. Group Dynamics: Theory, Research, and Practice, 8(4), 277-290. doi:10.1037/1089-2699.8.4.277

Bourbousson, J., Poizat, G., Saury, J., & Seve, C. (2010). Team coordination in Basketball: Description of the cognitive connections among teammates. *Journal of Applied Sport Psychology*, *22*(2), 150-166. doi:10.1080/10413201003664657

Cannon-Bowers J, Salas E, Converse S. Shared mental models in expert team decision making. *Individual and group decision making: Current issues* [e-book]. Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc; 1993:221-246. Available from: PsycINFO, Ipswich, MA.

Darioly A, Riggio RE. Nepotism in the hiring of leaders: Is there a stigmatization of relatives? *Swiss Journal of Psychology*. 73: 243-248. DOI: 10.1024/1421-0185/a000143

Denison, D., Lief, C. and Ward, J. L. (2004), Culture in Family-Owned Enterprises: Recognizing and Leveraging Unique Strengths. Family Business Review, 17: 61–70. doi: 10.1111/j.1741-6248.2004.00004.x

EEOC v. Rath Packing Company, 1986, EEOC 75-239, 2 Empl. Prac. Guide (CCH) P 6492, at 4260-61 (Mar. 2, 1976)

Forest, C. (2003). Empowerment skills for family workers: A worker handbook. Cornell University.

Gershgoren, L. (2013). The development and validation of the shared mental models in team sports questionnaire. *Dissertation Abstracts International Section A*, *73*.

Gorman J. C., Amazeen P. G., Cooke N. J.*(2010). Team coordination dynamics. Nonlinear Dynamics, Psychology, and Life Sciences, 14, 265–289.*

Gordon, G., & Nicholson, N. (2008).*Family wars classic conflicts in family business and how to deal with them*. Philadelphia, PA: Kogan Page.

Gulati, R., Wohlgezogen, F., & Zhelyazkov, P. (2012). The two facets of collaboration: Cooperation and coordination in strategic alliances. *The Academy of Management Annals*, *6*(1), 531-583. doi:10.1080/19416520.2012.691646

Gutman, A. (2012). Nepotism and employment law. In R. G. Jones, R. G. Jones (Eds.), *Nepotism in organizations* (pp. 11-41). New York, NY, US: Routledge/Taylor & Francis Group.

Hidayanto, A. N., & Setyady, S. T. (2014).Impact of collaborative tools utilization on group performance in university students. *TOJET: The Turkish Online Journal of Educational Technology*, *13*(2), 88-98.

Ho, V. T., & Wong, S. (2009). Knowing who knows what and who knows whom: Expertise recognition, network recognition, and individual work performance. Journal of Occupational and Organizational Psychology, 82(1), 147-158. doi:10.1348/096317908X298585

Jones, R., Stevens, M., & Fischer, D. (1999).Staffing a moving target: Selection in team contexts. In J.F. Kehoe (Ed.) *Managing Selection in Today's Organizations*. San Francisco: Jossey-Bass.

Jones, R.G., Stout, T., Harder, B., Levine, E., Levine, J., & Sanchez, J.I. (2008). Personnel psychology and nepotism: Should we support anti-nepotism policies? *The Industrial/Organizational Psychologist, 45*(3), 17-20.

Kolbe, M., & Boos, M. (2009).Facilitating Group Decision-Making: Facilitator's Subjective Theories on Group Coordination. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 10*(1).

Klimoski, R., & Mohammed, S. (1994). Team mental model: Construct or metaphor? *Journal Of Management*, *20*(2), 403-437. doi:10.1016/0149-2063(94)90021-3

Laker, D. R., & Williams, M. L. (2003). Nepotism's effect on employee satisfaction and organizational commitment: An empirical study. *International Journal of Human Resources Development and Management*, *3*, 191-202.

Littlepage, G. E., & Mueller, A. L. (1997). Recognition and utilization of expertise in problem-solving groups: Expert characteristics and behavior. Group Dynamics: Theory, Research, and Practice, 1(4), 324-328. doi:10.1037/1089-2699.1.4.324

Mehta, J., Starmer, C., & Sugden, R. (1994). The nature of salience: An experimental investigation of pure coordination games. American Economic Review, 84, 658-673. doi:10.1007/BF01079211.

Melis, Alicia P. (2013). The evolutionary roots of human collaboration; coordination and sharing of resources. Annals of the New York Academy of Sciences. Volume 1299, Sociability, Responsibility, and Criminality: From Lab to Law pages 68-76. Sep. 2013. DOI: 10.1111/nyas.12263

MSPB | Prohibited Personnel Practices of the Month (MSPB | Prohibited Personnel Practices of the Month) http://www.mspb.gov/ppp/mayppp.htm

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879-891.

Salas, E., Cooke, N. J., & Gorman, J. C. (2010). The science of team performance: Progress and the need for more…. *Human Factors*, *52*(2), 344-346. doi:10.1177/0018720810374614

Salas, E., & Goodwin, G. F., & Burke, C. S. (2009).*Team effectiveness in complex organizations : cross-disciplinary perspectives and approaches*. Routledge, New York.

Segal, N. L., McGuire, S. A., Miller, S. A., & Havlena, J. (2008). Tacit coordination in monozygotic twins, dizygotic twins and virtual twins: Effects and implications of genetic relatedness. *Personality and Individual Differences*, *45*(7), 607-612. doi:10.1016/j.paid.2008.06.022

Su, E., & Carney, M. (2013). Can China's family firms create intellectual capital? *Asia Pacific Journal of Management*, *30*(3), 657-675. doi:10.1007/s10490-012-9302-z

Tibbetts, J. R. (1995). *The Impact of the Human Dimension on a Three-Man-Crew Tank*. Army command and general staff coll. Fort Leavenworth, KS. School of advanced military studies.

Tziner, A., &Vardi, Y. (1983). Ability as a moderator between cohesiveness and tank crewsperformance. *Journal of Occupational Behaviour*, *4*(2), 137-143.

Vallejo, M. C.. (2008). Is the Culture of Family Firms Really Different? A Value-Based Model for Its Survival through Generations. *Journal of Business Ethics*, *81*(2), 261–279. Retrieved from http://www.jstor.org/stable/25482213

Werbel, J. D., & Hames, D. S. (1996). Anti-nepotism reconsidered: The case of husband and wife employment. *Group & Organization Management*, *21*(3), 365-379. doi:10.1177/1059601196213006

Woolsey, M.A. (2014). Perceptions of nepotism in a cultural context. Unpublished master's thesis, Missouri State University.