

# Game Rules And Their Effect On Team Cohesion

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## ABSTRACT

Multiplayer games (both face-to-face and online) frequently feature teams. This study aims to investigate whether it is possible to use the rules of a game to alter the team cohesion. Game rules from two face-to-face games have been analyzed using Social Identity Theory to predict which will create the more cohesive teams. These rules are also being implemented in two versions of an online game. Team cohesion in all four games will be measured to determine which set of rules is likely to foster cohesion.

## Author Keywords

Game design; Teamwork; Social interaction

## ACM Classification Keywords

H.5.3 Group and Organization Interfaces: Theory and models

## INTRODUCTION

Face-to-face games are predominantly multi-player and, since 1999, there has been an explosive growth in online multiplayer gaming [8]. However, designing for teamwork and cooperation seems mostly to consist of making the games either too difficult or physically impossible to complete alone [7]. This does not necessarily lead to strong, cohesive teams. In World of Warcraft the longevity of many guilds has been shown to be less than a month [3]. Is it possible to use the rules of a game to increase the cohesion of the groups or teams that form within the game? If so, game designers could have much more control over the strength of the teams, allowing them to choose whether player movement between teams becomes more or less of an issue in their games.

An online, multiplayer game called “African Farmer” is being designed as a learning tool for students of international development and future policy makers. This game will be run by a game manager and played by 15-35 players. These players will form small teams of up to 3, and each team will be responsible for a farming household consisting of a growing number of non-playing characters (NPCs). These NPCs range from babies to adults and if insufficiently cared for they may get sick or even die. Over a series of annual cycles the players make decisions about

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what to plant, grow, buy and sell to sustain their households through a variety of hazards, such as drought or pest attack.

Although the farming element is important, player interactions are also a key learning opportunity [9]. Both inter- and intra-household interactions can have a large impact on the strategies chosen and therefore the success (or otherwise) of the players.

African Farmer is loosely based on two pre-existing face-to-face games:

- I. The Green Revolution Game (GRG) [1] provides a simple yet sophisticated model of rice farming in Bihar, India. The game allows players to choose between planting normal or high yield rice to sustain their household members.
- II. Africulture [2] provides a model of gender roles in an African rural community. The players have a greater range of crops to choose from, but the farming model is less sophisticated.

These games have very different social models (see table 1). Social Identity Theory (SIT) [6] considers the way that group membership affects personal identity, and how different factors affect the strength of group identification. The factors identified in Table 1 leads to the prediction that GRG will produce a higher level of team cohesion than Africulture. The group identity should be more salient to the players than their personal identities [10], and not being able to change teams reduces the impact of group performance on in-group identification [4]. The increased information available during team formation in Africulture may mitigate this to an extent [5], but not enough to offset the other factors.

GRG	Africulture
Teams form before resource allocation.	Teams form during first round after resource allocation.
Teams fixed for game duration	Team members may leave and join a different team.
Players have team goals	Players have individual goals

**Table 1: Differences in the social model**

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## APPROACH

The research will investigate the relationship between game rules and team cohesion in four settings: GRG, Africulture, and two versions of African Farmer. The core African Farmer game will use the GRG social model. A second version will also be built, featuring the social model from Africulture. The farming model and interface will be the same as far as possible between the two versions. The study will use a between subjects design, due to the length of time the games take.

In order to measure the team cohesion in each game an instrument has been constructed consisting of 10 items, based on a pre-existing in-group identification scale [c.f. 4]. This will be administered in paper form at the end of the playing time for each of the face-to-face games, and in online form at the end of the online games. This data will be analyzed to compare the team cohesion in the games.

## EMPIRICAL WORK

The first study has been completed, with GRG being played by 16 players (10 female, 6 male). The players were asked to sit at any of the pre-arranged tables before the initial family and farm sizes had been allocated. They played for 3 hours and completed 5 annual cycles. A high value of team cohesion was found for all players (61.88 out of 70, SD = 4.72), which is in line with the prediction made using SIT.

The Africulture game will be played with a group of student participants in the near future. The survey results will be analyzed and compared to the results from GRG.



**Figure 1: The household screen with communication panel at the bottom.**

African Farmer has undergone extensive prototyping. The game will be based around a series of locations, including household, farm, village, marketplace and bank, with

different activities and information available to the players on each screen (see figure 1). Text-based communication has been built into each screen, and can be used to simulate face-to-face chat, mobile phone calls, or SMS communication.

Separate groups will play the two versions of African Farmer for a minimum of 5 annual cycles. This will allow strategies chosen by the players to come to fruition and the relative success of the team to become apparent.

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