

Social Psychology, CSCW, and MMOs

CSI60: User Interfaces

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Review

- Motivation for design patterns
- What are design patterns, what is a pattern language?
- A brief history of design patterns
- Examples of UI design patterns and game design patterns

Topics

- Social psychology and design implications for CSCW.
- Non-verbal communication and video conferencing.
- Social behavior in an MMORPG (World of Warcraft).

Note: CSCW = Computer Supported Cooperative Work, but these days it includes non-work group activities.

Social Psychology

- Why study it?
- It helps us understand human collaboration, which is one of the most difficult areas of HCI.



Mere presence effects

- Simply being near others can lead to changed performance, e.g. Triplett's fishing observations.
- How would fishermen in a group perform differently from individuals?



Mere presence effects

- A: They catch more fish *per fisherman* !
- But specifically, which aspects of performance change?



Mere presence

- Stress, anxiety or stimulation increase physiological arousal, and arousal ***speeds up behavior.***
- The presence of others pushes these buttons...
- But increased speed can also increase errors, so it can be ***bad on difficult tasks.***

Mere presence

- Increased arousal generally helps learning
- But, it also heightens response to well-learned stimuli (Zajonc and Sales):

It says "alpha helix"



Mere presence

- Mere ***presence*** isn't quite the right idea.
- The presence of a blindfolded subject didn't increase arousal, and didn't affect performance.
- The presence of others ***evaluating*** or ***competing*** with us is what matters.

Mere presence – Design Implications

- Increasing the level of group “awareness” should increase mere presence effects:
 - Heightened arousal
 - Faster performance
 - Increased learning
 - More errors
- Examples:
 - High awareness – video conferencing, phone
 - Medium – Instant messaging
 - Low awareness – Email

Mere presence – Design Implications

- What would be a good medium for:
 - Routine discussions?
 - Brainstorming?
 - Working on difficult tasks, e.g. programming?

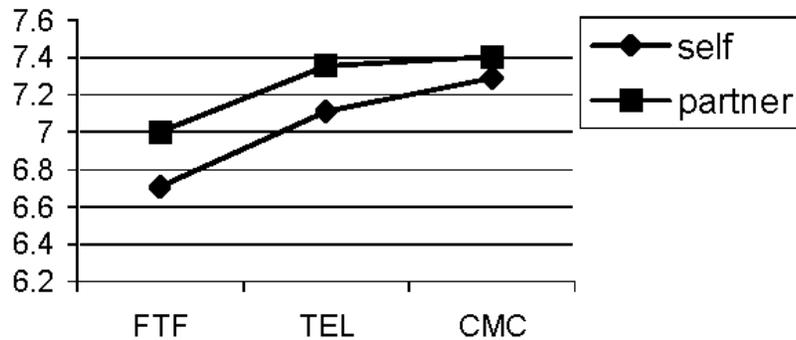
Two Experiments

- We wanted to see how media affect social interaction. Subjects had to meet and get to know in each in a short session via:
 - Face-to-face
 - Via email
 - Via telephone
- Subjects met for 5 minutes with one partner, and could talk about anything they wanted.
- Then they switched partners.
- They met with 4 partners in all.
- Finally they completed a survey about their experiences.

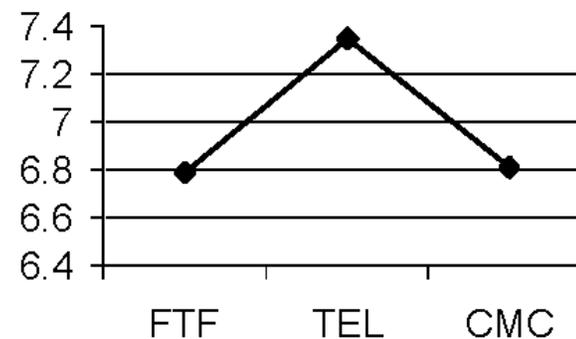
Results

- Subjects were questioned under several measures of the success of the social interaction.

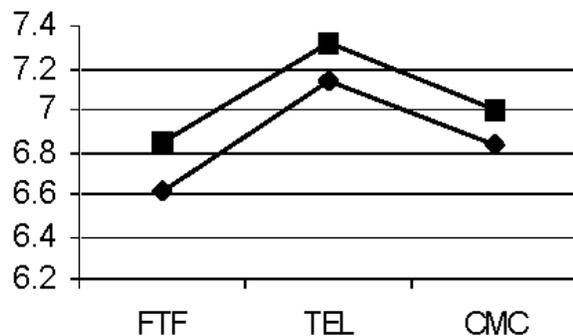
1a. Acted Like Self



1c. Satisfied with Behavior



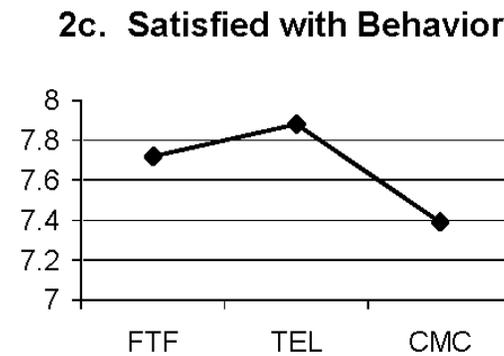
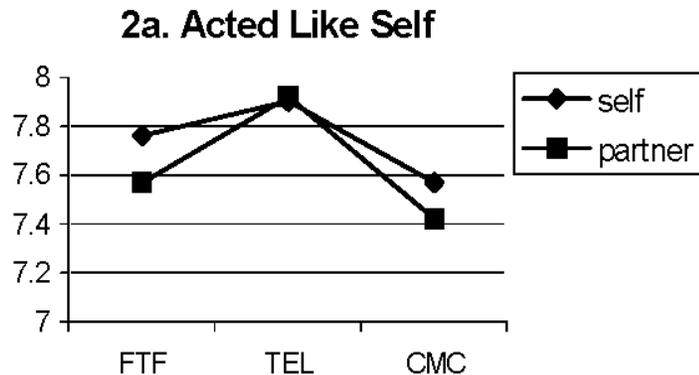
1b. Behaved as Intended



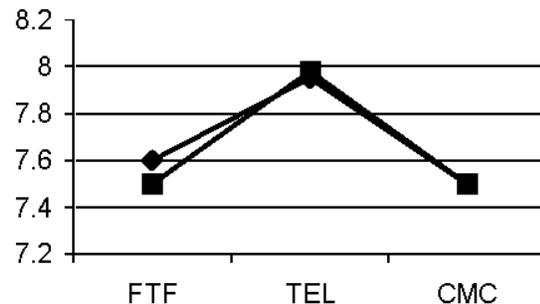
Surprisingly, the phone wins!

2nd Experiment

- We surveyed workers at a Bay Area company about their day-to-day interactions with colleagues. The results were similar:



2b. Behaved as Intended



Once again, the phone came out on top!

Analysis

- What's the drawback of face-to-face?
- We know that face-to-face interaction is demanding on users:
 - Subjects devote energy to **impression management**, and to **evaluating others**.
 - This **cognitive load** detracts from the communication task.

Attribution

- How do we attach meaning to other's behavior, or our own?
- This is called attribution.
- E.g. is someone angry because something bad happened, or because they are hot-tempered?



Attribution: ourselves

- Lets start with ourselves, how good are we at figuring out our emotions?
- Schacter: it depends strongly environmental and physiological factors, and others near us.
- The bottom line is that we can feel strong emotion, but struggle to recognize it as happiness or anger.



Attribution theory

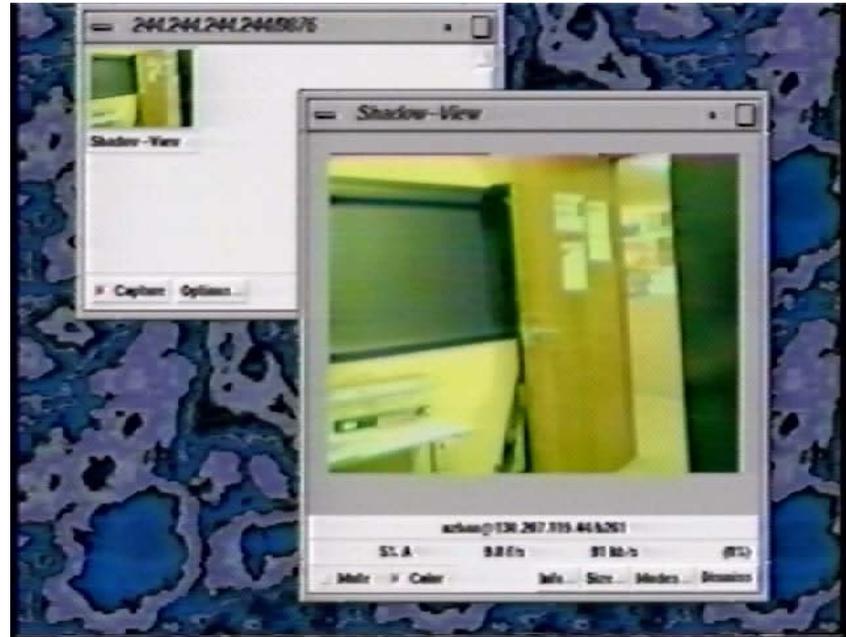
- Attribution theory: was this behavior caused by personality, or environment?
- Fundamental attribution error:
 - When I explain my own behavior, I rely on external explanations.
 - When I explain others' behavior, I'm more likely to attribute it to personality and disposition.
 - e.g. other drivers are either “lunatics” (faster than me) or “losers” (slower than me). Of course, they have the same model about you 😊...

Attribution theory

- How should you design communication systems to minimize attribution errors?

Attribution theory – design implications

- To reduce attribution errors, its important to have as much context as possible.
- E.g. room-scale video-conferencing, or ambient displays:



Social Comparison

- We need to make comparisons to make judgements about people. Three rules:
 - Limitation: qualities must be observable and comparable to be attributed.
 - Organization: we use categories to describe and think about people; friendly, studious, careless etc.
 - Meaning: categories of personality must make sense, e.g. friendly and cooperative go together, friendly and hostile do not.

Groups

- Groups are a strong influence on our behavior.
- A “reference” group is one we share a psychological connection with, e.g. a club or honor society we aspire to join.
- We compare our selves to reference groups to make self-assessments.



Groups

- Groups give us value in several ways:
- They provide us norms for behavior (informational function)
- They satisfy interpersonal needs (interpersonal function)
- They provide us with concrete support, resources, help (material function)

Groups and Motivation

- Groups increase motivation in two ways
- First, the social interaction with the group intensifies individual motivation, and sometimes generates new individual motives.
- Second, the group can cause group goals and motives to be created. E.g. group maintenance is goal most groups have.

Group experiences – Design implications

- Normative data can be very helpful – how am I doing compared to a typical colleague?
 - Compute normative data automatically
- Set short-term goals, mark off successes – challenge to do this efficiently
 - PERT charts or Calendars
 - Daily software builds
 - Extreme programming

Non-verbal communication



Why do people travel for business?

- ?

So why not use video-conferencing?

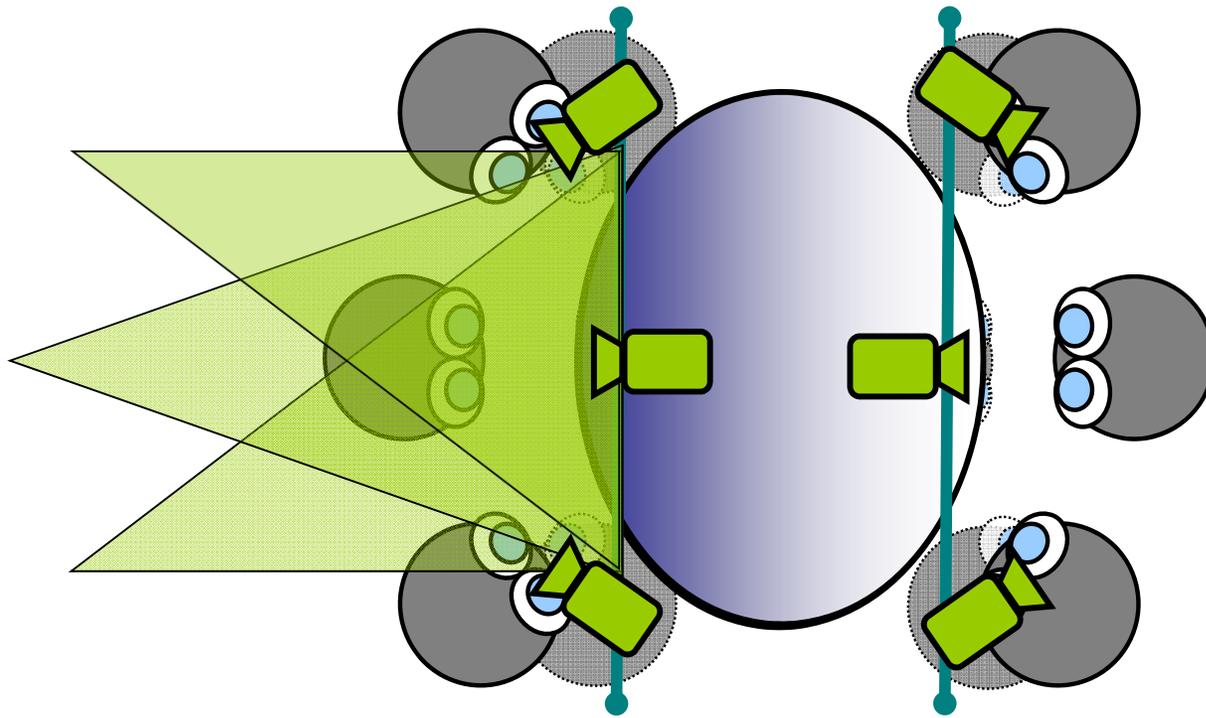
Industry growth



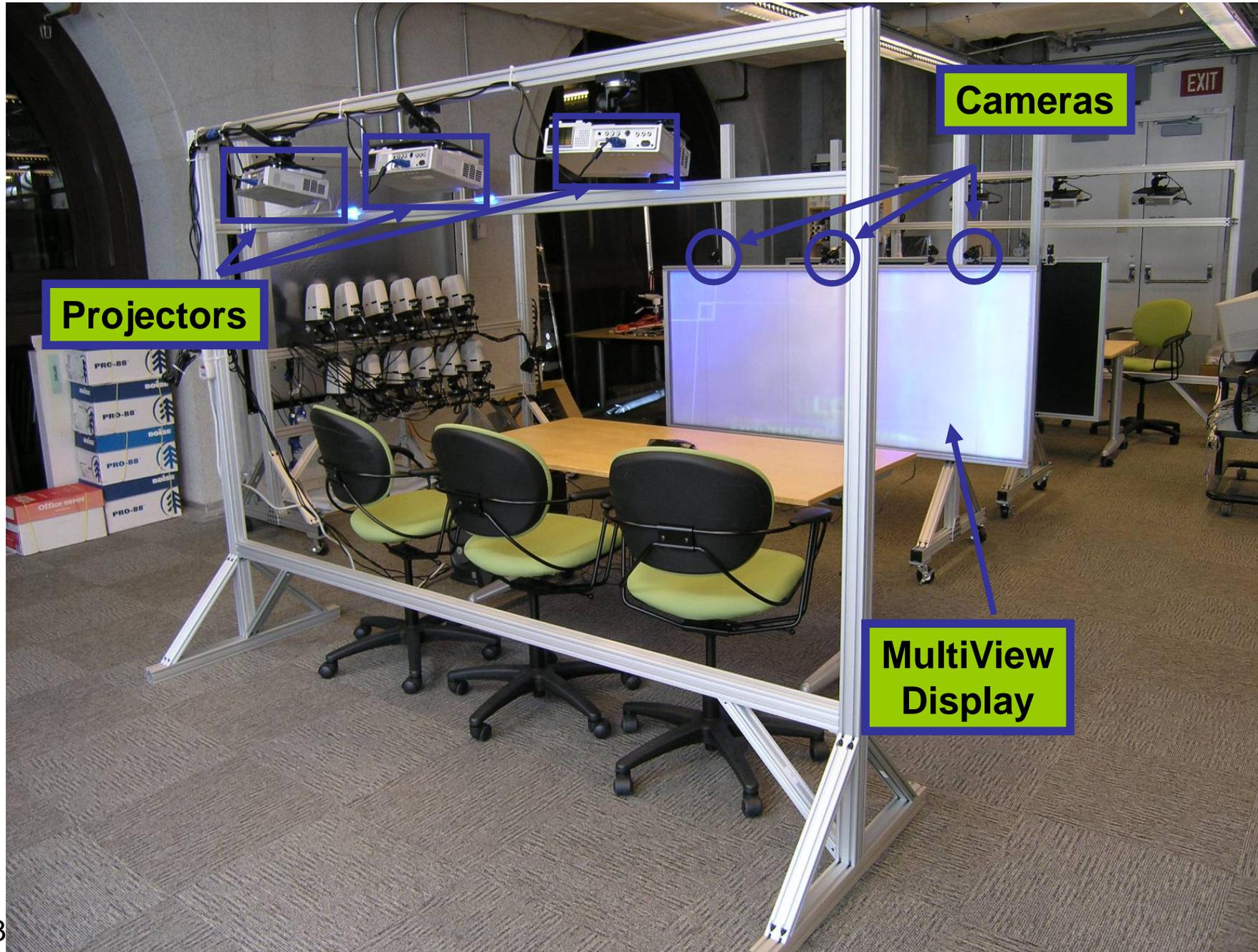
The Mona-Lisa Effect

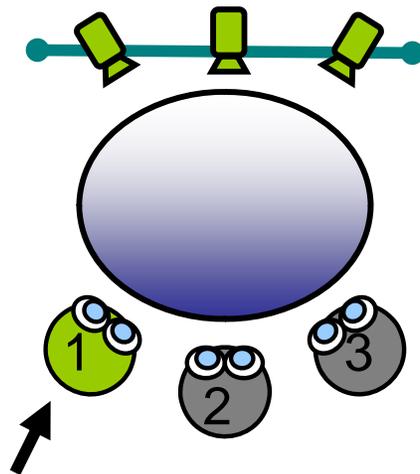


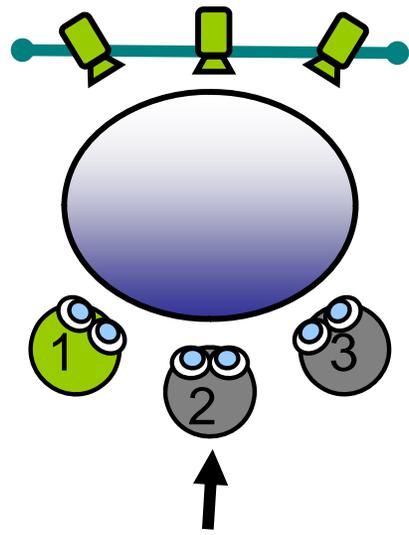
Our Approach

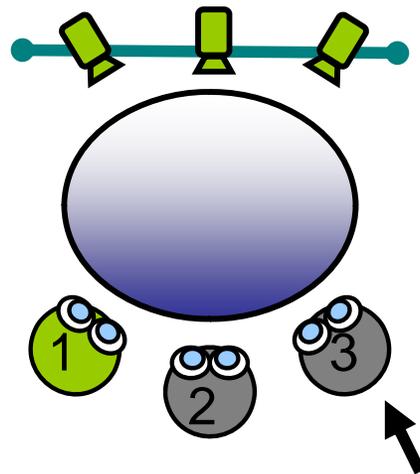


Multiview









Does it matter?

Let's pick a deal-making task called "daytrader" that simulates joint investment between local and remote teams.

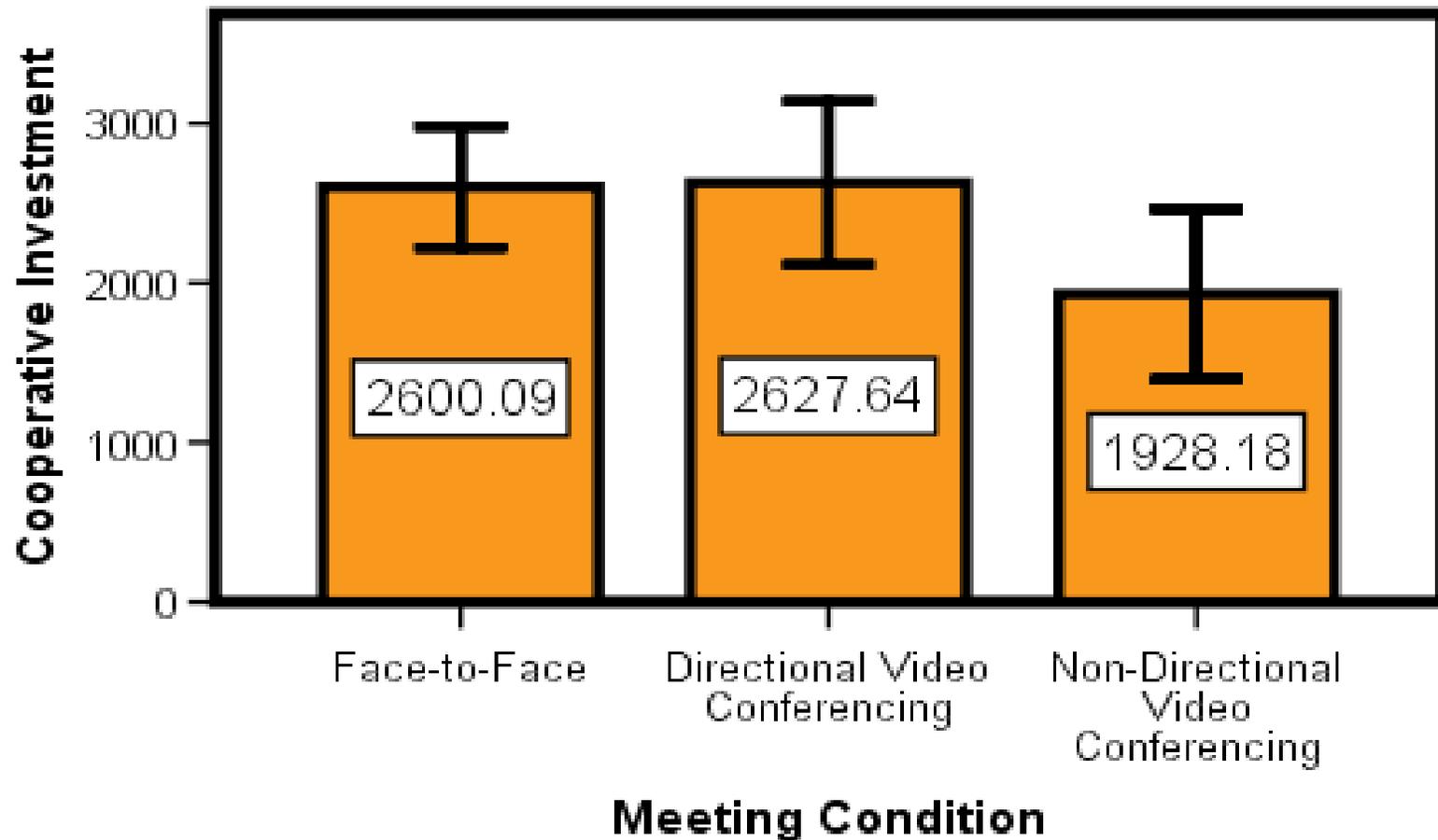
The more teams cooperate, the more they make overall.

But in each round, a team can cheat and make more in that round, so trust is key to the game.

We compared face-to-face interaction, conventional video and Multiview video with two teams of 3.

Multiview vs std. Video & F2F

Effect of Directional Video Conferencing on Cooperative Investment



Error bars: 95% CI

Recent result: Framing matters

Gaze is part of “non-verbal communication” (NVC).

Non-verbal communication includes:

- Gaze
- Facial expression
- Gesture
- Posture
- Proxemics
- Contact

Most of this are lost in “talking head” video conferencing. We studied the influence of the video boundary.

Recent result: Framing matters



Framing matters

Subjects interacted one-on-one, we were interested in measures of empathy and “oneness”.

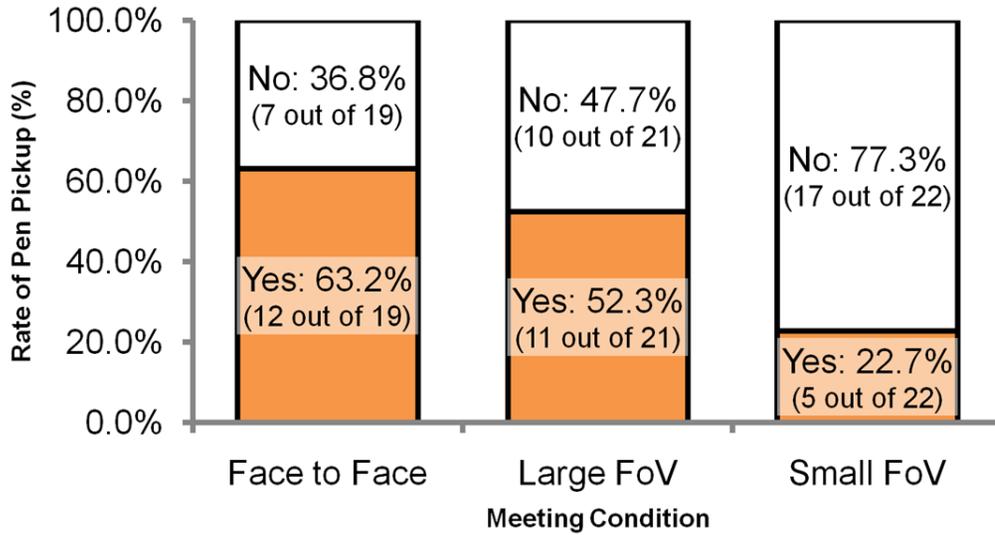
For oneness, we relied on a survey.

For empathy, we used the “pen drop experiment”.

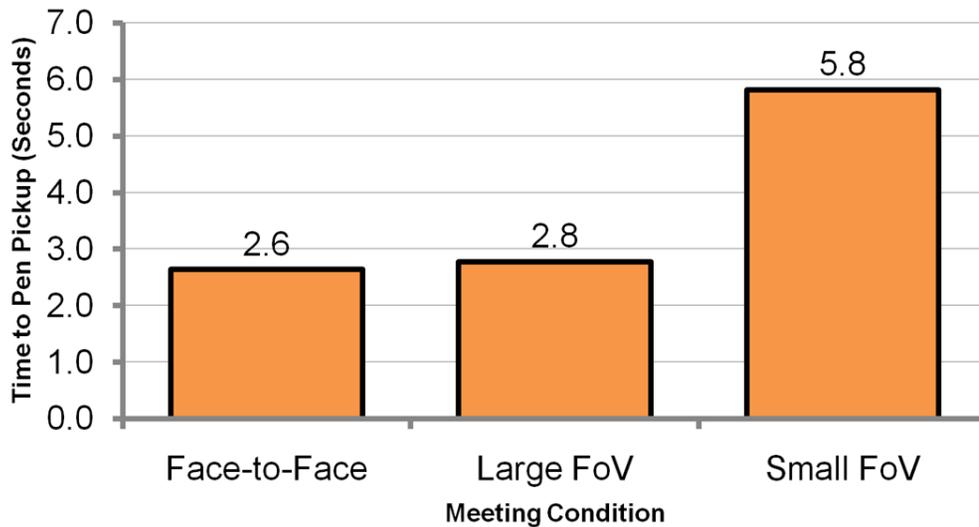


Results

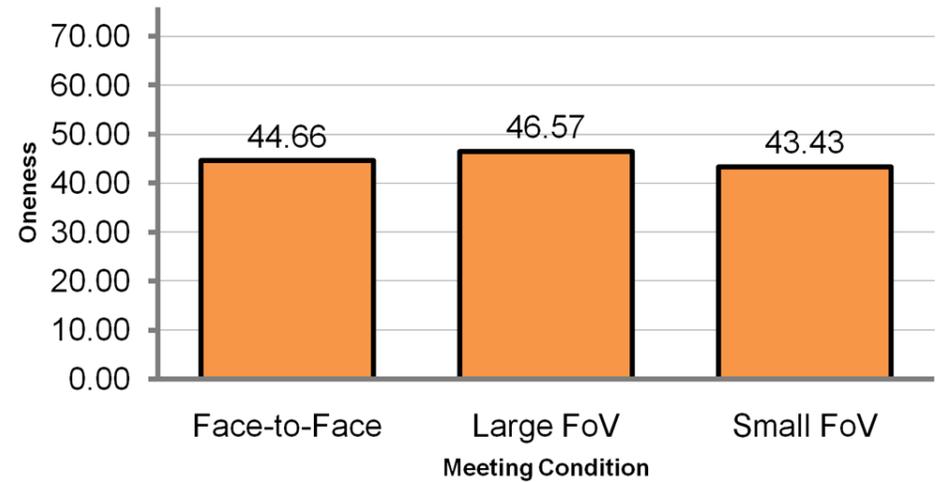
Rate of Pen Pickup by Field of View



Time to Pen Pick-Up by Field of View



Oneness by Field of View



Social Dynamics of MMORPGs

- Reward structure in WoW: careful progression of playing time with levels:

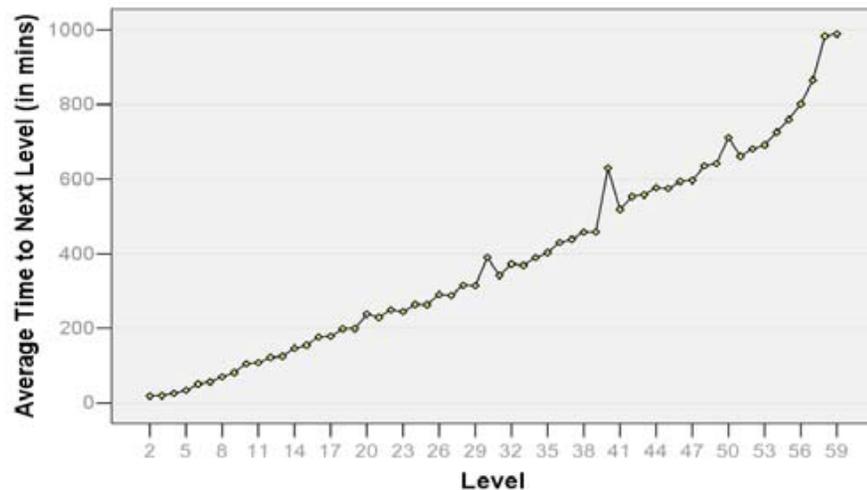


Figure 2 - Average time required to reach a level

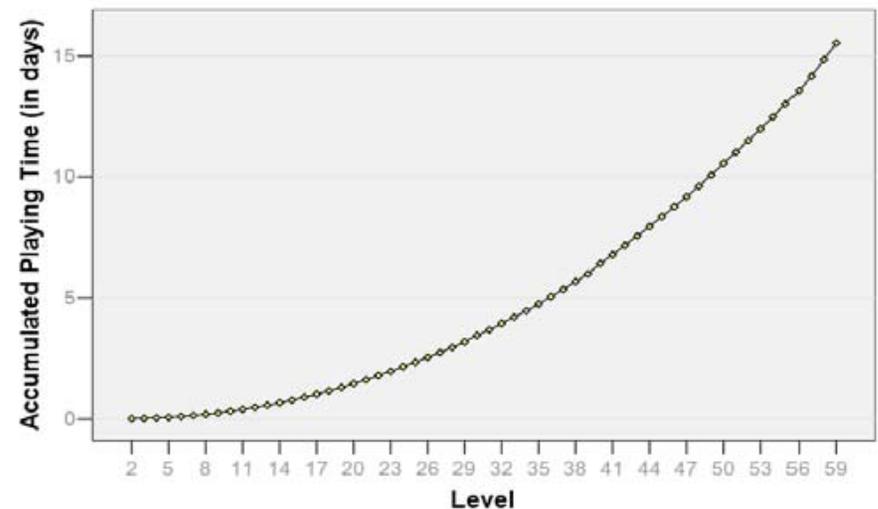


Figure 3 - Average accumulated play time by level

- i.e. WoW is extremely strong as a single-player game.

Social Dynamics of MMORPGs

- World of Warcraft, the most successful MMORPG when it was released.
- Encouraged social play via group quests and guilds.



Groups in WoW

- WoW encourages group play in two ways:
 - Characters have complementary abilities
 - Groups are required to perform harder quests

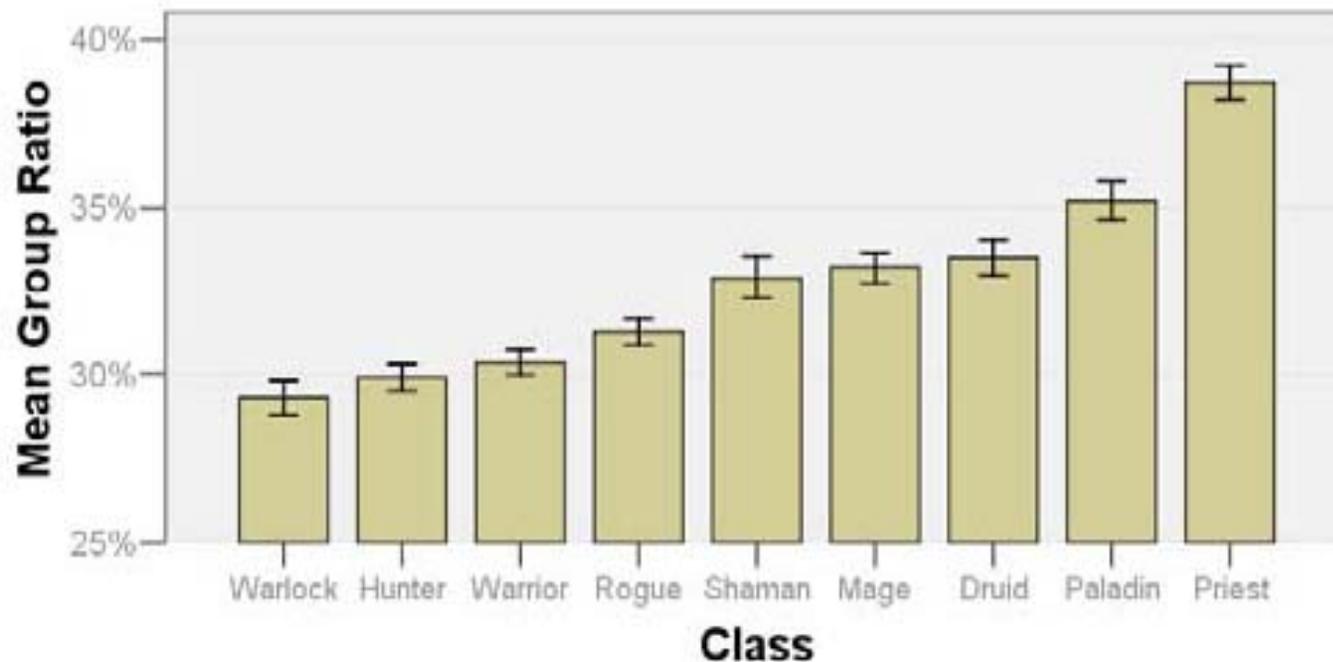


Figure 4 - Average time spent in a group, by class

Groups in WoW

- WoW encourages group play in two ways:
 - Characters have complementary abilities
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Figure 4 - Average time spent in a group, by class

Groups in WoW

- Group play as a function of level:

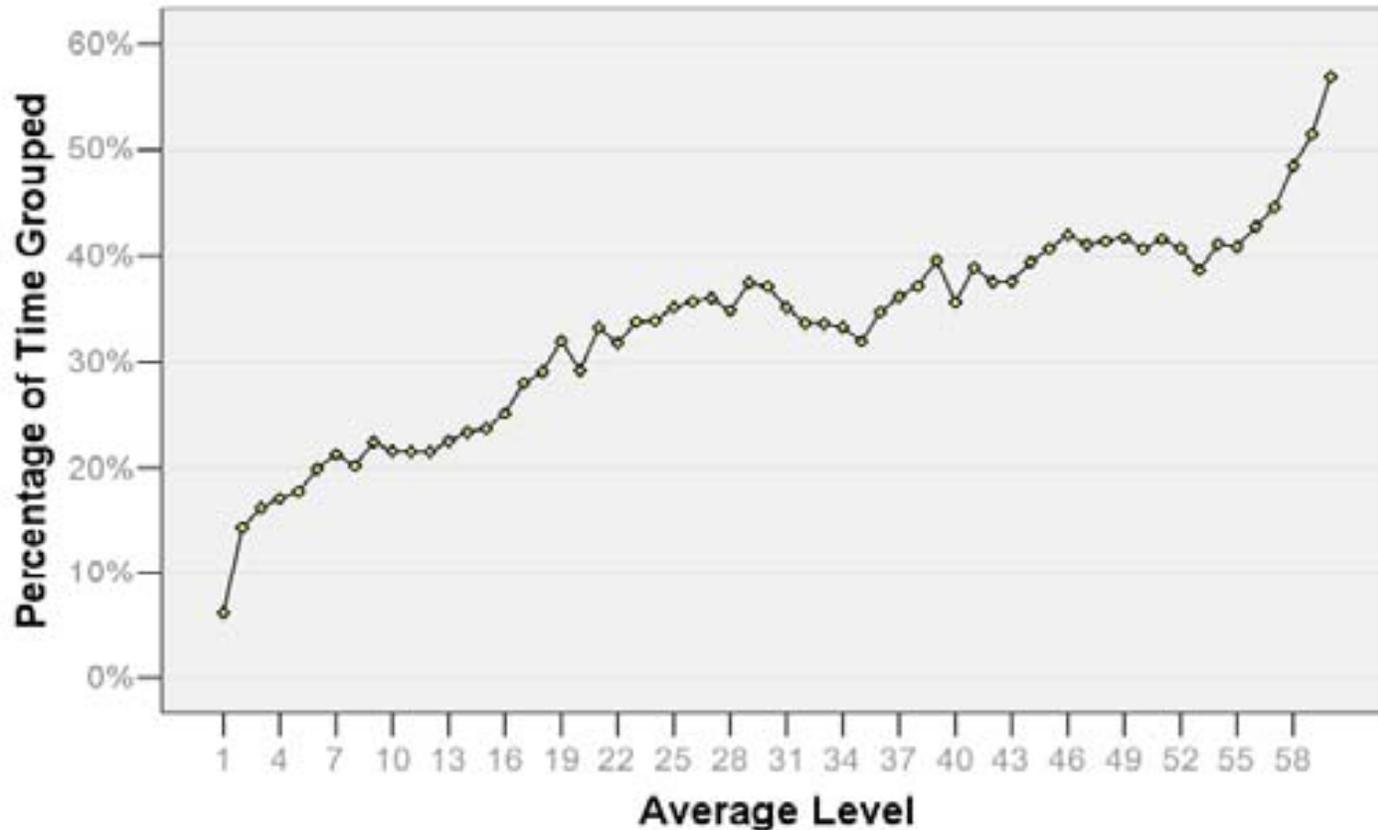


Figure 5 - Fraction of time spent in groups, by level

Groups in WoW

- Leveling time as a function of time spent in groups

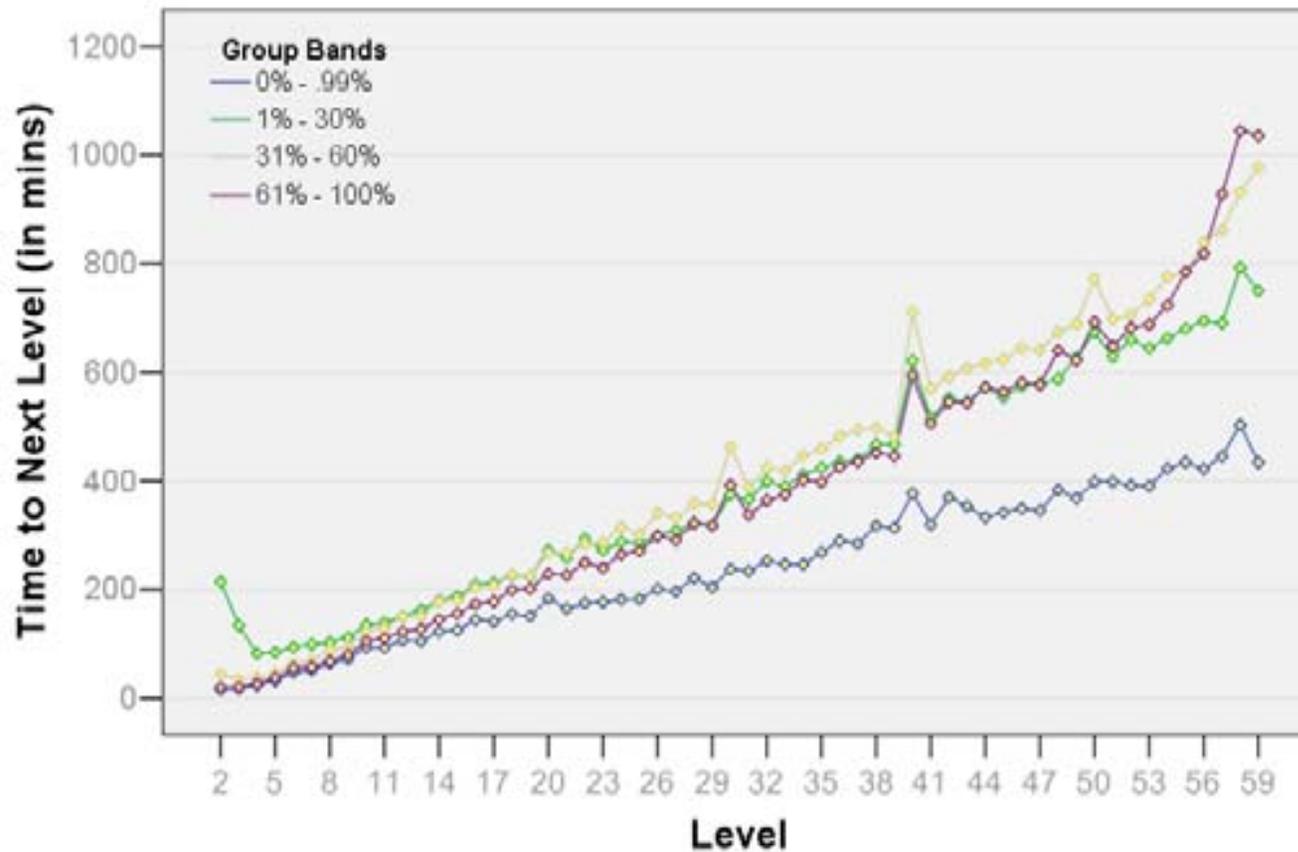


Figure 6 - Impact of grouping on leveling time

Guilds

- Guilds are long-lived groups of players created by the players themselves.
- Guilds are groups of players who know each others' skills and can work together regularly to meet challenges.
- They should be at the same level so they are motivated by the same quests.
- Guild membership is about 66% overall, and 90% at level 43 and above.

Guilds and playing time

- Guild members have some dependence on each other, and create pressure for players to play more.

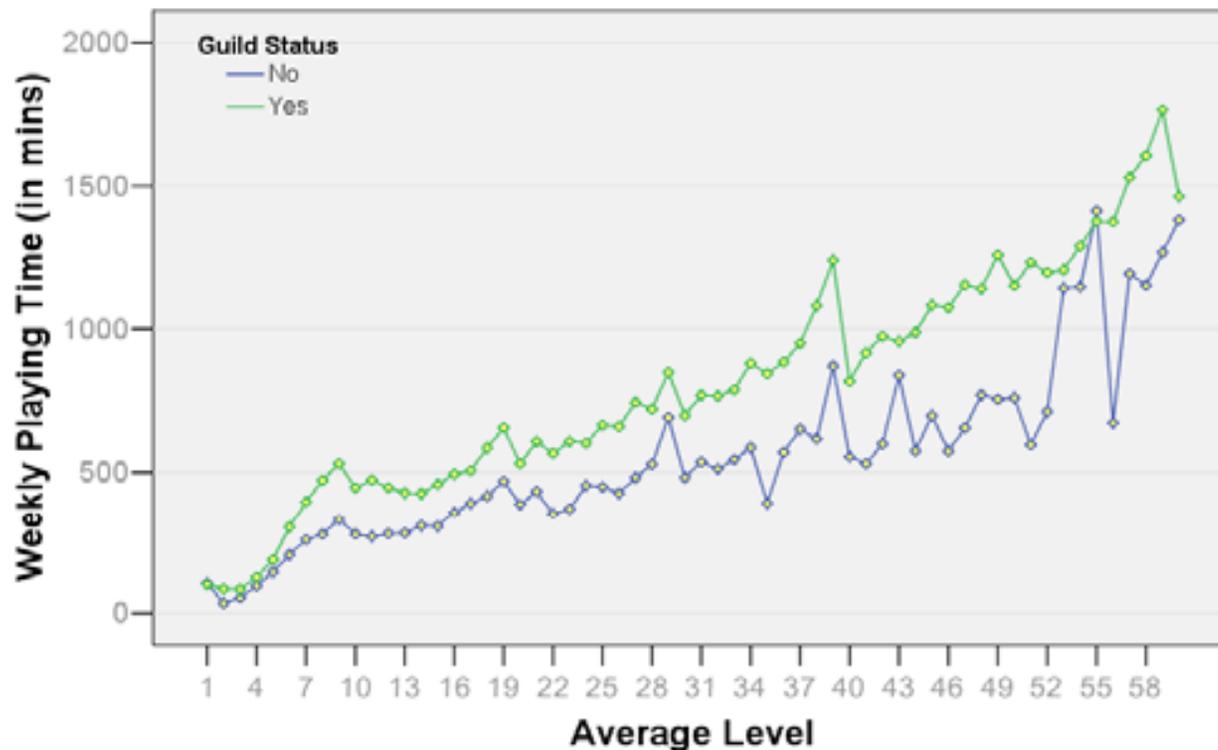


Figure 7 - Guild membership and playing time, by level

Guild size

- Guilds tend to be small:
 - Average size 14.5
- Guild size tends to stay constant over time
- **BUT:**
 - Player churn is significant, and old players regularly leave and are replaced by new ones.
 - Guilds themselves churn regularly, 25% of them disappear each month.

Guild Networks

- The social networks in guilds usually have a committed core, and several peripheral players:

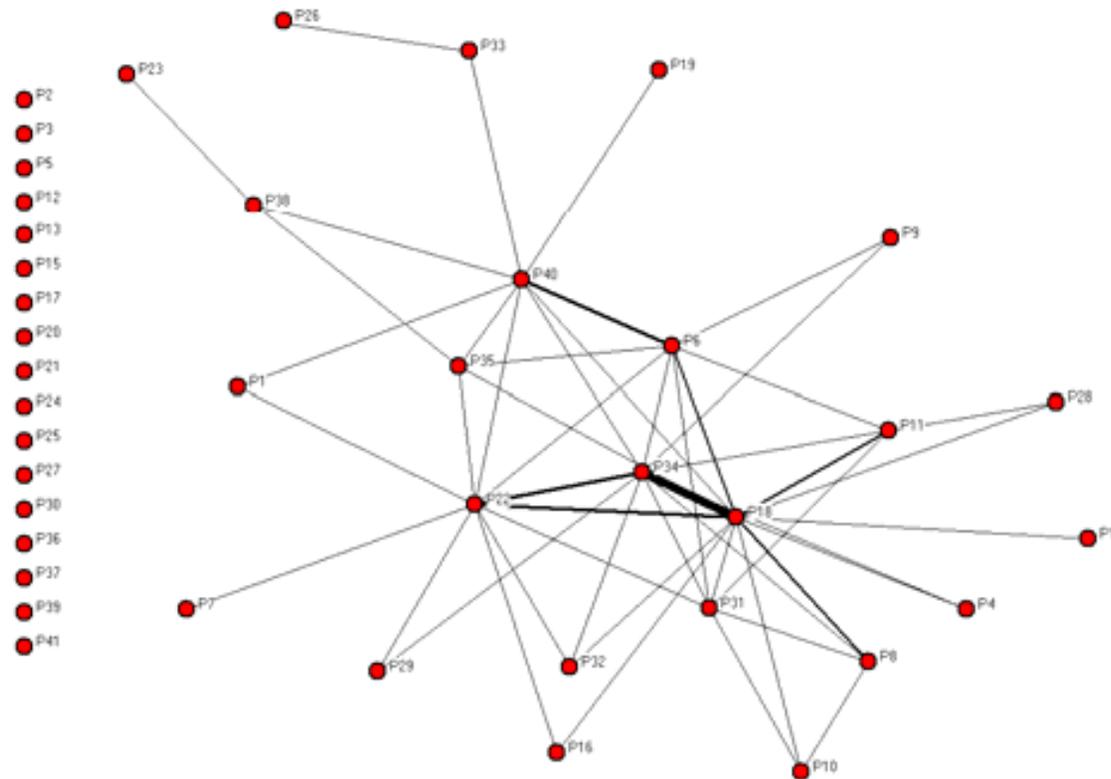


Figure 8 – Co-location network in a medium-sized guild

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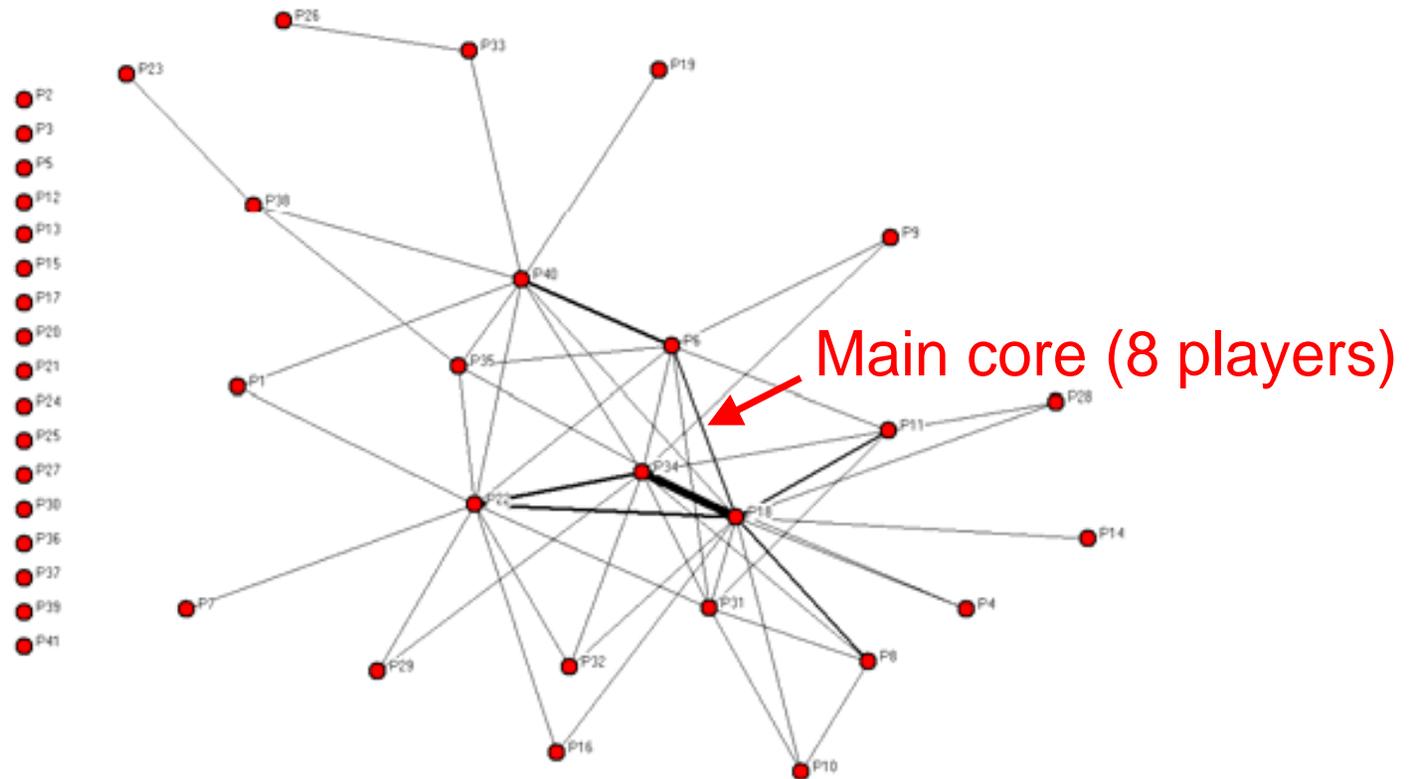


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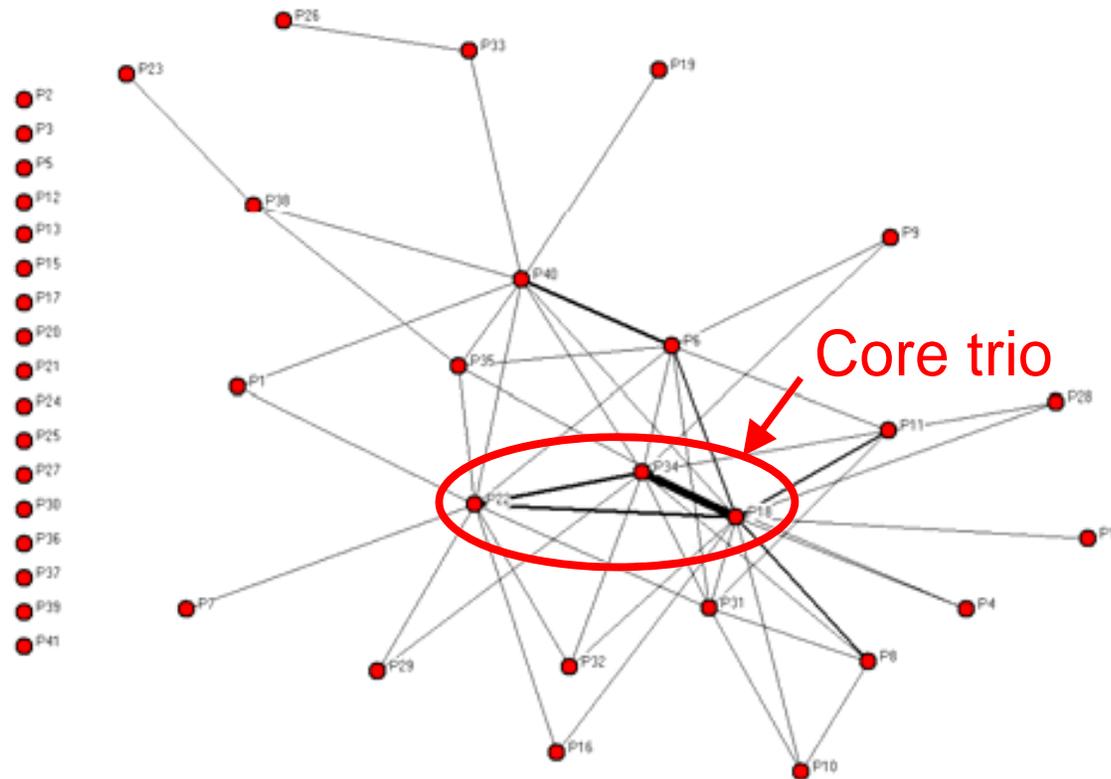


Figure 8 – Co-location network in a medium-sized guild

WoW discussion

- Game design (playability) is still a big factor in success of the game.
- WoW was designed to be accessible to many players, and the leveling structure is very clean.
- Group play increased with level, but group play was less efficient for rapid leveling.
- Guilds are small, churn regularly, and players turn over to keep the guild at its working size.
- They often have a committed core and periphery.
- Groups and guilds are formed from need, but players still play “alone together”.

Alone together

Why do players enjoy individual play in a public arena?

The answer seems to be:

- Audience
- Social presence
- Spectacle

Alone together

Why do players enjoy individual play in a public arena?

The answer seems to be:

- Audience
- Social presence
- Spectacle

Summary

- Mere presence influences speed of performance, through evaluation and competition.
- Attributions of behavior causes have an actor-observer effect.
- Social comparison is how we make judgements.
- Groups influence our perception of self and others through norms (reference groups).
- Groups influence behavior as well.