

# Daniel G. Stephenson

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## Research Interests

experimental economics, dynamic games, behavioral economics, contests, mechanism design

## Education

Postdoctoral Studies in Economics, Chapman University, 2017-2019

Ph.D. in Economics, Texas A&M University, 2011-2017

B.Sc. (Summa Cum Laude) in Economics, Campbell University, 2006-2010

## Job Market Paper

### Continuous Feedback in School Choice Mechanisms

Conventional implementations of school choice mechanisms reveal assignments to participants only after all preference reports have been finalized. This paper experimentally investigates novel implementations that provide participants with assignment feedback throughout the preference reporting period. Nash equilibrium predictions remain unaffected by the provision of this feedback, but adaptive models predict that it will promote rational preference revelation by providing boundedly rational participants with increased opportunity for learning and adjustment. To test this hypothesis, the experiment implements both conventional discrete feedback and continuous assignment feedback in three widely employed school choice mechanisms: the deferred acceptance mechanism, the top trading cycles mechanism, and the Boston mechanism. In line with adaptive models, subjects achieved equilibrium assignments far more often under continuous assignment feedback, suggesting that policy makers can improve the effectiveness of school choice mechanisms by providing participants with more feedback during the preference reporting period.

## Publications

### Coordination and Evolutionary Dynamics: When are Evolutionary Models Reliable?

Games and Economic Behavior (2018)

This study reports a continuous-time experimental test of evolutionary models in coordinated attacker-defender games. It implements three experimental treatment conditions: one with strong coordination incentives, one with weak coordination incentives, and one with zero coordination incentives. Each treatment exhibits identical equilibrium predictions but distinct evolutionary predictions. Observed behavior was tightly clustered around equilibrium under both the zero coordination treatment and the weak coordination treatment but widely dispersed from equilibrium under the strong coordination treatment. This result was anticipated by explicitly dynamic models but not by conventional stability criteria. In contrast to the widely maintained assumption of sign-preservation, subjects frequently switched to lower earning strategies, suggesting that non-sign-preserving evolutionary models may provide a more accurate characterization of human behavior.

### Continuous-Time Experiments (with Alexander L. Brown)

Handbook of Experimental Game Theory (Forthcoming)

Edward Elgar, Rachel Croson, Tanya Rosenblatt, and Mary Rigdon (eds.)

Practical concerns can limit the number of repetitions that can be observed in the laboratory. It is often infeasible to hold subjects in a laboratory for more than three hours. Further, subjects may lose attention well before that time limit is reached. Given that a single one-shot period can take several seconds, there is an upper bound on the number of discrete periods that can be implemented in a laboratory experiment. Continuous time experimental protocols provide an alternative. They allow subjects to take actions and receive real-time feedback continuously. By giving subjects the freedom to adjust their actions as frequently as desired and providing real-time feedback, continuous time experiments effectively reduce the length of discrete periods to near instants, accelerating the emergence of long-run behavioral patterns and providing unique insights into the dynamic processes through which such behavioral patterns emerge.

## Working Papers

### **Multi-Battle Contests over Complementary Battlefields**

Achieving success in one conflict can often enhance the value of success in other conflicts. This paper investigates multi-battle contests where asymmetrically endowed agents allocate resources to compete over multiple complementary prizes. The share of each prize awarded to each agent is given by an arbitrarily decisive contest success function. Prizes serve as constant elasticity inputs with with an arbitrary degree of complementarity. This value structure covers a wide variety of cases ranging from Cobb-Douglas to perfect complements. Such contests are shown to possess a unique pure strategy Nash equilibrium under arbitrarily decisive success functions. In contrast, conventional blotto games and multi-battle conflicts have no pure strategy Nash equilibrium when contest success functions are sufficiently decisive. These results indicate that complementarity between prizes can play an important role in stabilizing strategic behavior.

### **Predicting Behavior in Disequilibrium in Continuous Space and Time**

(with Alexander L. Brown)

A large class of adaptive models take imitation as the primary driver of behavior, while others focus on some form of optimization. Previous literature is mixed on which class of models is more appropriate for describing human behavior. To test these models, we experimentally investigate continuous-time all-pay auctions where optimization models predict convergence to equilibrium but imitative models predict non-convergence, providing clean separation between the theoretical predictions of imitative models and those of optimization models. In accordance with theoretical predictions from adaptive models, but in contrast to Nash equilibrium predictions, we observe incessant disequilibrium cycles in subject bidding behavior.

## Teaching

Econ 202, Principles of Economics, Primary Instructor  
Texas A&M University, Fall 2016

Econ 459, Games and Economic Behavior, Primary Instructor  
Texas A&M University, Spring 2016

Econ 459, Games and Economic Behavior, Primary Instructor  
Texas A&M University, Spring 2015

Econ 202, Principles of Economics, Primary Instructor  
Texas A&M University, Summer 2013

Econ 618, Behavioral Financial Economics, Teaching Assistant  
Texas A&M University, Fall 2015

Econ 449, Economics of Decision, Teaching Assistant  
Texas A&M University, Spring 2013

## Talks

*Multi-battle Contests over Complementary Battlefields*  
2018 Stony Brook International Conference on Game Theory

*Multi-battle Contests over Complementary Battlefields*  
2018 Contests: Theory and Evidence Conference

*Continuous Feedback in School Choice Mechanisms*  
2016 Texas Economic Theory Camp

*Coordination and Evolutionary Stability in Attacker-Defender Games*  
2016 Texas Experimental Economics Association Symposium

*Coordination and Evolutionary Stability in Attacker-Defender Games*  
2015 Economic Science Association North American Meeting

*Preference Revelation Dynamics in Continuous-Time School Choice Mechanisms*  
2014 Economic Science Association European Meeting

*Preference Revelation Dynamics in Continuous-Time School Choice Mechanisms*  
2014 Economic Science Association North American Meeting

*Social Learning in Continuous-Time All-Pay Auctions*  
2013 Economic Science Association American Meeting

*Social Learning in Continuous-Time All-Pay Auctions*  
2013 Economic Science Association World Meeting

## Organizational Memberships

American Economic Association  
Economic Science Association

## Awards

The John Van Huyck Graduate Fellowship  
Department of Economics, Texas A&M University, 2016

The S. Charles Maurice Graduate Fellowship  
Department of Economics, Texas A&M University, 2015

Outstanding Graduate Instructor in Upper Level Economics  
Department of Economics, Texas A&M University, 2015

Doctoral Dissertation Research Improvement Grant  
National Science Foundation, 2014

Best Fourth Year Presentation Award  
Department of Economics, Texas A&M University, 2014

## References

- Dr. Daniel Kovenock  
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Chapman University Professor
- Dr. Alexander L. Brown  
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Texas A&M University Professor
- Dr. Catherine C. Eckel  
ceckel@tamu.edu  
Texas A&M University Professor