



The Effect of Depression and Alcohol Abuse on Social Economic Decision Making

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Foreword and Acknowledgements

This research is a part of the requirements for a MSc in Clinical Psychology. The research is the product of three semesters and is presented in the form of an article for a peer-reviewed journal.

Formulation of the research topic, preparation, literature review, research schedule and application for research permission from the National Bioethics Committee in Iceland was done in the spring semester 2015. Procedure for the research was formed and decided in the fall 2015 and first phase of data collection took place in early December at Reykjavík University and the second phase in Kringlan late December and beginning of January 2016. Data analysis and writing took place over the spring semester 2016. Manuscript of a paper for publication for a peer-reviewed journal was completed in May 2016.

The aim of the study was to explore the effects of depression and alcohol abuse on social economic decision making. By using the economical game, the distrust game, we explored the relationship between trust and symptoms of depression and alcohol abuse. For the past few years economic games have been used in clinical and subclinical samples to study the connection between social functioning and several mental disorders. Economic games have, for instance, been used to report that individuals with depressive symptoms have a deficiency or fail in cooperative behavior, trust, and altruistic behavior compared to their healthy counterparts. Economical games have been used to report that individuals with alcohol dependence make more disadvantageous decisions, display memory deficits, less trust and are more impulsive. Trust is considered a key element in social interactions but has proven difficult to conceptualize and measure. Trust among strangers is a particularly relevant type of trust for our study and it requires holding the target of trust constant because studies have shown that individuals are believed to have a stable tendency towards trusting and distrusting. Research has shown that individuals with borderline personality disorder and

social anxiety disorder display less trust in interpersonal interactions. Only a few economical games have been used in association with depressive symptoms and symptoms of alcoholic abuse and none of which has used the distrust game in doing so. Our study replicates in part a study by Clark et al. (2013) by correlating the outcome of the distrust game (McEvily, Radzevick & Weber, 2012) with a cut-off score from the DASS and the PHQ-9 and looks to extend the paradigm of economic games to the study of the relationship between alcohol use disorder and trust.

The collection of data was done in two phases. The first phase took place at Reykjavík University where students participated in class, completed the distrust game, and answered depression and alcohol abuse questionnaires. The second phase took place at Kringlan, a shopping center in Reykjavík, where visitors were offered to participate in the study to match the student sample.

The Supervisors of this research and of this paper were Haukur Freyr Gylfason, second author and Adjunct, and Jón Friðrik Sigurðsson, third author and Professor and Director of the Masters program in Clinical Psychology at Reykjavík University.

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ABSTRACT

Background: Trust is considered a key element in social interactions and has been defined in many ways in the literature. Distrust on the other hand has been argued to be the opposite feeling of trust. Deficits in decision-making and interpersonal difficulties are common in individuals with mental illnesses such as depression and addiction and have been measured through economical games. The current study used the distrust game, as a proxy for trust, to assess distrust in a student sample that scores above a cut-off score on psychological questionnaires measuring depression and alcohol abuse. We hypothesized that individuals with more depressive symptoms show more distrust than individuals with less depressive symptoms, and that there is an association between alcohol abuse and distrust.

Method: Participants (N=196) played the distrust game measuring distrust towards an unknown participant. Participants completed the DASS, PHQ9, BSU and questions based on the AUDIT scale.

Results: Participants with more depressive symptoms showed significantly more distrust than participants with less depressive symptoms. No significant association was found between scores on the AUDIT and the distrust game.

Conclusions: Individuals with more depressive symptoms distrust more than individuals with less depressive symptoms when playing against an unknown individual. Alcohol abuse was not correlated with scoring in the distrust game. Lack of association between alcohol abuse and distrust could be due to the age of the sample. Prior results indicate that for alcohol abuse to influence decision-making it must have taken place in adolescence rather than adulthood.

Keywords: trust, distrust, distrust game, behavioral economics, depression, alcohol abuse

1. Introduction

Trust is considered a key element in all social interactions (Thielmann & Hilbig, 2015). Trust impacts interpersonal and group behavior (Buchan, Croson & Solnick, 2008; Johansson-Stenman, Mahmud & Martinsson, 2005; Zak & Knack, 2001), and is situation specific (Fleeson & Leicht, 2006). Trust, however, has proven difficult to conceptualize and measure (Glaeser, Laibson, Scheinkman & Soutter, 2000; McEvily, Radzevick & Weber, 2012; McEvily & Tortoriello, 2011; Simpson, 2012).

A simple definition of trust reveals how important trust is in interpersonal situations (Smedslund, 1997). Smedslund's definition of trust is that if Catherine trusts Elizabeth, then Catherine believes that Elizabeth will not harm her. Therefore, Catherine does not have to be on her guard (Schul, Mayo & Burnstein, 2008) and use her limited resources, like time, to monitor Elizabeth.

Different types of trust exist depending on the context (Simpson, 2012), although one type in particular seems relevant and that is trust among strangers (McKnight, Cummings, & Chervany, 1998). The electronic commerce sector is growing and is progressively pressing people to trust strangers when they purchase products online. A variety of every day social interactions require trusting strangers, thus excluding the long-term formation of trusting relationship (Bohnet & Zeckhauser, 2004; Dunning, Fetchenhauer & Schlösser, 2012; Dunning & Fetchenhauer, 2010; Gill, Boies, Finegan & McNally, 2005). Economic perspective assumes that humans are rational individuals who maximize utility and are primarily motivated by self interest e.g. it would be irrational to trust strangers (Evans & Kruger, 2009; Weber, Malhotra & Murnigan, 2005). However people do trust strangers and trust among strangers represents a behavioral tendency that remains stable across the person's life span (Sutter & Kocher, 2007). This stable tendency towards trusting or distrusting shows a person specific aspect underlying trust and intra individual consistency between trust and

behaviour across situations (Fleeson & Leicht, 2006). The premise that individuals show different level of trust for different targets is vital to the measurement of trust. To make a precise comparison of trust measures it requires holding the target constant to e.g. a stranger (McEvily et al 2012).

Individuals with mental illness have been shown to have deficits in ability to socialize (King-Casas & Chiu Chiu, 2012; Lam, Schuck, Smith, Farmer & Checkley, 2003; Segrin, 2000), cooperate with others (Cáceda et al., 2014; Clarke et al, 2013; King-Casas et al., 2008) as well as maintain interpersonal relationships with others (Davila, 2001; Joiner, Metalsky, Katz & Beach, 1999; Segrin, 2000). The diagnostic criteria for several disorders specify that an inability to socialize is a factor in disorders such as social phobia, borderline and antisocial personality disorders, and is associated with major depressive disorder (MDD) and alcoholic use disorder (AUD) (DSM-V; American Psychiatric Association, 2013).

Notably, individuals with depressive symptoms have deficiency or failing in decision-making (Paulus, 2007), cooperative behavior (Clarke et al. 2013) and social functioning (Cáceda et al., 2014). Although, cognitive biases in depression have been studied intensively (Beck, 2008), only few have studied how cognitive biases influence decision making which could lead to an inferior outcome for individuals inflicted with depression (Harlé, Allen, & Sanfey, 2010). One such study, by Clark et al. (2013), describes an association between depressive symptoms and an inability to sustain reciprocal cooperation. They, however, somewhat unexpectedly found no association between depressive symptoms and trust as measured by the trust game (Berg, Dickhaut, & McCabe, 1995). Individuals with depression report more negative personal interactions and show excessive reassurance seeking (Hammen and Brennan, 2001; Joiner, et al., 1999; Zlotnick, Kohn, Keitner & DellaGrotta, 2000), of which both rest on trust. Trust is an essential component in cooperative behavior and a fundamental factor in mental health. Trust allows people to establish cooperative

relationships with other people, resulting in socially supportive human relationships (Watabe et al., 2015).

The decision-making process in addicted individuals has been shown to be limited in several ways (Yamamoto et al., 2014; Krmpotich et al., 2015). Individuals with alcohol dependence have deficits in controlling impulsive behaviors (Khemiri, Kuja-Halkkolka, Larsson & Jayaram-Lindström, 2016; Krmpotich et al., 2015), temporal discounting (Yi, Buchhalter, Gatchalian & Bickel, 2007), and display poor decision making under ambiguity and risk (Brevers et al, 2014). Adolescent binge drinkers are reported to have less inhibition, executive dysfunction, and decreased executive memory compared to non-binge drinkers (Gil-Hernandez & Garcia-Moreno, 2016). However, for alcoholic consumption to have an effect on neural effort and decision-making, a prolonged and excessive consumption must have taken place, preferably in adolescence (Garcia-Moreno, Expósito, Sanhueza & Angulo, 2008; Hartley, Elsabagh & File , 2004). Research has shown that adolescence is an imperative time period of neurocognitive development with heightened susceptibility to long term negative effects of alcoholic consumption, an on-going process until the age of 25 that can influence impulsivity and attention later in life (Giedd et al, 2009; Reiss, Abrams, Singer, Ross & Denckla, 1996; Sanches-Roige, Peña-Oliver, Ripley & Stephens, 2014; Schindler, Tsutsui & Clarke, 2014).

The literature on association between alcohol abuse and trust is scarce and it seems like the role of trust in alcohol abuse has not been directly studied at all. Despite the lack of published studies on the subject we were able to find one study by Coëffec (2011) that showed that patients with past or present diagnosis of alcohol abuse showed low score on personality facets of trust, achievement striving, self-discipline and dutifulness and high score on impulsiveness, vulnerability and excitement seeking. A significant association was between alcohol abuse and trust towards others and self-confidence.

For the past years economic games have been used in clinical and subclinical samples to study the connection between social functioning and several mental disorders (Clark et al., 2013; Harlé et al 2010; Watabe et al., 2015; Zhang, Sun & Lee, 2012). Economic games have, for instance, been used to report that individuals with depressive symptoms have a deficiency or tend to fail in cooperative behavior (Clark et al., 2013; Harlé et al., 2010), trust (Watabe et al., 2015) and altruistic behavior (Zhang et al., 2012) compared to their healthy counterparts. And that individuals with borderline personality disorder and social anxiety disorder display less trust in interpersonal interactions (Unoka et al. 2009; King-Casas and Chiu, 2012; King-Casas et al., 2008; Sripada et al., 2009).

Moreover, economic games have been used to measure different aspects of alcohol usage or abuse. Such games have been used, for example, to report that individuals with alcohol dependence make more disadvantageous decisions in economical decision tasks (Brevers et al., 2014), display memory deficits and slow deliberation time in risky decision making (Lawrence, Luty, Bogdan, Sahakian, & Clark, 2009), and impulsivity (Yi et al., 2007).

To date only few economical games have been used in association with depressive symptoms (Clark et al., 2013; Unoka et al, 2009; Zhang et al., 2012, Wang et al, 2014) and none of which has used the distrust game in doing so. In their study, Clark et al. (2013) used the trust game (Berg et al., 1995) to correlate trust with depressive symptoms captured with the depression anxiety and stress scale (Lovibond and Lovibond, 1995). They did not find any association between depressive symptoms and trust. However, that could be attributed to the fact that they used one measure of depressive symptoms and did not use cut-off scores. The current study replicates Clark et al. (2013) in part by correlating the outcome of the distrust game (McEvily, Radzevick, & Weber, 2012) with a cut-off score from the depression anxiety and stress scale and the PHQ-9, and looks to extend the paradigm of economic games

to the study of the relationship between alcohol use disorder symptoms and trust. We hypothesize that, individuals with higher level of depressive symptoms distrust more than individuals with lower level of depressive symptoms.

Previous research on alcohol abuse limits our ability to hypothesize about the association between alcohol abuse and trust. On one hand research has shown that increased alcohol abuse increases distrust (Coeffec, 2011), however, on the other hand research has shown that it also increases risk seeking behavior and impulsivity while at the same time it decreases accuracy (Yi et al., 2007; Lawrence et al., 2009; Brevers et al, 2014). Therefore a directional hypothesis is not presented for alcohol abuse rather we hypothesize that a correlation is between alcohol abuse and distrust.

2. Method

2.1. Participants:

Our study paired students with regulars at a local shopping center. The students had financial incentives to trust the regulars who in return had financial incentives to fleece the students. A total of 196 pair of students and shopping center regulars participated in the study. In the student sample there were 110 (56%) women and 85 (44%) men, and the average age was 23.24 ($SD = 5.06$) years. The field participants were recruited in Kringlan, a shopping center in Reykjavik, to match the student sample with the function to complete the distrust game. Therefore, the primary focus is on the student sample.

2.2. Measures

2.2.1. The distrust game. Participants played a single round of the distrust game (McEvily et al., 2012). Before participating in the study the students received, as a group, a power-point presentation with short instructions on how to play the distrust game. Subsequently, the students were asked to read the game's full instructions (McEvily et al., 2012).

The students were told that they would be playing against a real participant in a local shopping center, and were able to read the instructions that the field participants would get. These instructions specified that the pair had been allocated ISK 1,000 (ISK 500 each) as total wealth. The field participant's share was ISK 500, and he/she had to specify how much of the student's share (ISK 500) he/she wanted to keep for him/herself. The field participant would either receive this amount or ISK 500, depending on the student's actions (students were able to use their ISK 500 to pay not to play the game). That meant that for the field participants their cut of the total wealth allocated would never be less than ISK 500 and never more than ISK 1,000.

The students were able to specify how much they were willing to pay out of their own ISK 500 to not have to play against a field participant, and instead be guaranteed what was left of their ISK 500. They could pay between ISK 0 to ISK 500 negate the field participant's discretion over the division of their ISK 500. The students were introduced to the "Decision Sheet", a form that contains 11 decision options and asked to indicate how much they were willing to pay to not play the distrust game against the field participant. Each decision had two options "pay X" to avoid playing the game or play the game. The "pay X" choice was in ISK 50 increments (e.g.. decision one ISK 0, decision two ISK 50, ... decision 11 ISK 500). When the students had filled out the "Decision Sheet", an option was chosen by random and that option was used as the student's move against the field participant. If an option that the students had filled as "pay X" to not play the game, then the student received ISK 500 - X. If an option was selected where the students had filled in "play the game" then it was the field participants choice how much of the student's share he/she wanted to keep for him/herself (all of it, some of it, or none of it). A composite measure for distrust was computed, from 0 to 11, with higher values indicating more trust.

During the following two weeks after data collection at Reykjavík University, the researchers collected data from the field participants at a local shopping center (Kringlan). They were informed that they were playing against an undergraduate student at Reykjavik University and received their payment on site. The students received their earnings following the completion of the data collection at the shopping mall.

After completing the distrust game the students moved on to complete psychological measures and demographic characteristics.

2.2.2. Mood and anxiety symptom. Participants completed the Icelandic version of the Depression Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995), a 42 item, 4 point Likert scale self-report questionnaire that requires the participants to rate how accurately the statements describe their behavior, emotions or thoughts for the past week. The DASS has three subscales measuring depressive, anxiety and stress symptoms. The participants also completed the Icelandic version of the Patient Health Questionnaire (PHQ9; Kroenke, Spitzer, & Williams, 2001; Spitzer, Williams & Kroenke, 1999) a nine item self-report questionnaire. A cut-off score of 12 was used for the DASS depression scale (Nieuwenhuijsen, de Boer, Verbeek, Blonk & van Dijk, 2003) and a cut of score of 8 was used for the PHQ-9 (Manea, Gilbody & McMillan, 2012).

2.2.3. Addiction and alcohol consumption. Participants completed the Icelandic version of the Beliefs about Substance Use questionnaire (BSU) (Wright, Beck, Newman, Liese, 1993). The BSU is a 20 item questionnaire on a seven point Likert scale that evaluates how much participants agree or disagree with statements about usage of alcohol and/or narcotics. Participants also answered seven questions on excessive drinking based on the AUDIT-scale (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The questions, which were intended to screen for excessive alcohol consumption were: *How often, in the last 12 months, have you consumed alcohol to overcome the repercussions of drinking?*, *How often, in the last 12*

months, have you found that you were not able to stop drinking once you had started?, How often, in the last 12 months, have you had a feeling of guilt or remorse after drinking?, How often, in the last 12 months, have you been unable to remember what happened the night before because you had been drinking?, How often, in the last 12 months, have you failed to do what was normally expected from you because of drinking?, How often, in the last 12 months, has your alcohol consumption negatively impacted your work, studies or job-opportunities?, and How often, in the last 12 months, do you have five or more drinks on one occasion?

3. Results

Just over 83% of students reported at least one symptom of depression on the DASS. For the DASS the average score for the depression subscale was 6.46 ($SD = 7.41$), for the anxiety subscale 5.74 ($SD = 6.07$), and 9.73 ($SD = 8.24$) for the stress subscale. Around 93% of students reported at least one symptom of depression on the PHQ-9, with average score of 5.75 ($SD = 4.37$). The correlations between DASS and PHQ-9 were high, and the depression scales correlated weakly with the alcohol scales. The correlation between the outcome of the distrust game and the mood and alcohol measures were not significant (Table 1).

Table 1

Correlation between the Outcome of the Distrust Game and Mood and Alcoholic Measures.

	1	2	3	4	5	6
1 DASS Depression	(.93)					
2 DASS Anxiety	.63***	(.87)				
3 DASS Stress	.70***	.77***	(.92)			
4 PHQ-9	.79***	.67***	.76***	(.82)		
5 Excessive drinking	.25**	.12	.13	.28***	(.73)	
6 BSU	.17*	.12	.14	.19**	.47***	(.79)
7 Distrust game	-.08	.06	-.03	-.07	-.03	-.04

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-sided)

A linear regression was used to determine whether the outcome from the distrust game predicted depressive symptoms while controlling for gender, age and anxiety (Table 2). Using one-sided alternative, the outcome from the distrust game significantly predicted the depressive symptoms, measured both by DASS and PHQ-9.

Table 2

Linear Regression Results for the Distrust Game in Predicting Depression

	<i>DASS depression</i>		<i>PHQ-9</i>	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Gender (female)	-1.70*	0.85	0.31	0.52
Age (centered at 19 years)	0.03	0.09	0.01	0.06
DASS Anxiety	0.71***	0.07	0.44***	0.05
Distrust	-0.33*	0.19	-0.21*	0.12

* $p < .05$ (one-sided), ** $p < .01$ (one-sided), *** $p < .001$ (one-sided)

A measure of depressive dichotomous score was created using the cut-off scores from both the DASS depression subscale and PHQ-9. A cut of score of 12 was used for the DASS depression scale and 8 for the PHQ-9 scale. Using that dichotomous score a binary logistic regression was used to determine whether the distrust game significantly predicted the more refined measure of depression while controlling for gender, age and anxiety. Table 3 shows the results of this binary logistic regression, where there was a significant association between the outcome of the distrust game and depression.

Table 3

Binary Logistic Regression Results for the Distrust Game in Predicting Depression.

	<i>DASS depression</i>		
	<i>b</i>	<i>SE</i>	<i>Nagelkerke R²</i>
Gender (female)	0.34	0.53	.37
Age (centered at 19 years)	0.00	0.06	
DASS Anxiety	0.20***	0.04	
Distrust	-0.41**	0.14	

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-sided)

A linear regression was used to determine whether the outcome from the distrust game predicted excessive drinking and BSU scores while controlling for gender, age and anxiety (Table 4). Using one-sided alternative, the outcome from the distrust game did not predict excessive drinking or BSU scores.

Table 4.

Linear Regression Results for the Distrust Game in Predicting Alcohol Consumption and Beliefs about Substance use.

	Excessive drinking		BSU	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Gender (female)	-1.35**	0.56	-4.07**	1.50
Age (centered at 19 years)	-0.02	0.06	0.15	0.16
DASS Anxiety	0.10*	0.05	0.19	0.13
Distrust	-0.04	0.12	-0.07	0.33

* $p < .05$ (one-sided), ** $p < .01$ (one-sided), *** $p < .001$ (one-sided)

4. Discussion

In line with our first hypothesis, distrust was associated with depressive symptoms as measured by DASS depression scale and PHQ-9. That contradicts Clark et al. (2013) results where they did not find an association between trust game and depressive symptoms measured by DASS depression scale. Clark et al. (2013) point out that they did not use multiple assessments that “would have allowed for a more refined comparison between the various diagnostic criteria and associate features of depressive symptoms.” (p. 1186). When using a more refined measure of depression using a dichotomous score computed from the cut-off scores of DASS depression scale and PHQ-9 we found an even stronger association between trust and depression. This would suggest, contrary to Clark et al. (2013) argument, that even in one time interactions individuals with higher levels of depressive symptoms seem to struggle.

We did, however, not find any association between distrust and excessive drinking and BSU. Coëffec (2011) reports a significant association between trust toward others and alcohol abuse. BSU is an attitudinal measure on beliefs about substance use (Wright et al., 1993) and not a well-defined measure of alcohol abuse. Our measure of excessive drinking is a surrogate measure on alcohol abuse (Babor et al., 2001), however, both measures correlated equally weakly with trust.

Further research is necessary to shine a light on the relationship between depressive symptoms and economic games. When reviewing the literature a strong indication appears that theory of mind is a factor in depression and the capability of displaying (dis)trust in economic games (Joiner, Yamada & Kamba, 2006; Yoshida, Dolan & Friston, 2008). In our study, we held the trust situation constant and also the target of trust constant. No information about the individual's characteristics were disclosed other than he was a passer-by in a local shopping center. Theory of mind is important in gameplay to work out what the other person

is thinking and how they might react. The individual is considered to have a stable tendency towards trusting or distrusting, which is the primary measure in our game (McEvily et al, 2012; Fleeson & Leicht, 2006).

For our second hypothesis a correlation between distrust and excessive drinking and BSU was not significant. Our sample was relatively young with half of the students 21 years or younger. During adolescence the neurocognitive development is an on-going process until the age of 25 (Giedd et al, 2009; Reiss et al., 1996) and is a time period with heightened susceptibility for long term negative effects of alcoholic consumption (Schindler et al, 2014) that can influence impulsivity and attention later in life (Sanches-Roige et al, 2014). This might suggest that for alcohol abuse to have an effect on decision making in the distrust game, the participants would have needed to be older, i.e. an alcoholic dependence has not become a problem for our participants.

There were a number of limitations to our study. First, the study assessed depressive symptoms and alcohol abuse symptoms in a subclinical population who were not known to have depression or alcohol dependence. Recruiting participants with a diagnosis of major depressive disorder and alcoholic use disorder, as an experimental group, and assessing gameplay compared to a control sample would have been desirable. Economic games have been used on clinical samples and shown deficits in decision making (Harlé et al, 2010; Zhang et al., 2012). Similarly a measure of depressive symptoms and alcohol abuse symptoms was done using self-report scales. A diagnosis of major depressive disorder and alcoholic use disorder is given by clinicians who rely on the diagnostic criteria of the Diagnostic Statistical Manual. Additionally, alcohol use symptoms were assessed with a questionnaire based on AUDIT and the BSU. Future research should use another questionnaires to measure alcohol abuse or addiction in a student sample.

Despite these limitations the study confirmed what other studies have shown that there is a relationship between the trends individuals display in economic games and symptoms of depression (Clarke et al, 2013; Harlé, et al, 2010; Wang et al. 2014) Also the study used real field participants which was not done in the respective studies (Clark et al.2013; Harlé et al, 2010; Watanabe et al., 2015; Zhang et al., 2012). While economic games do not measure depression directly they have been shown to be an effective way to assess social dysfunction, which is associated with depression (Segrin, 2000; Watabe et al, 2015).

It is worth noting that Watabe et al (2015) used the trust game (Berg et al., 1995) on a subclinical sample and got association with one item on PHQ-9 and outcome in the trust game. The study by Clarke et al (2013) used a subclinical sample, like the current study, but was unable to show significant association between the trust game and depressive symptoms measured by DASS depression.

Past studies have documented that economic games can, potentially, model the behavior of clinical populations (King-Casas & Chiu, 2012; Sripada et al., 2009; Yi et al., 2007, Clarke et al., 2013; Zhang et al., 2012). Watabe et al. (2015) used the trust game (Berg et al., 1995) to correlate trusting behavior with various psychometric scales (e.g. PHQ-9) in Japan. Novel types of psychiatric phenomena have emerged in Japanese culture called "modern-type depression" or hikikomori (severe social withdrawal lasting more than 6 months). Watabe et al. (2015) concluded that economic games were potentially effective in clinical practise and psychiatric research.

Economic games have been shown to be a good alternative measure to self-report measures in the appraisal of trusting behaviors (Watabe et al, 2015) and might be useful in assessing, for example, social interactions between partners, patient-therapist relationship or even capability of a employees in financial companies. Social skills and trusting behavior are not innate and can be measured through a skill based appraisal and reinforced with guidance.

Future research needs to uncover and isolate underlying mechanism that drives the social dysfunction and deficits in the decision making that these games measure. The use of economic games has already shown its efficacy as an alternative tool in the assessment of different psychological disorders and therapy.

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