Reading fiction appears to not change economic preferences of rural Burkinabè youth*

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Abstract: Since the rise of mass-distributed novels in the 1800s many have hypothesized that reading fiction would have significant effects on values and preferences. Yet there has been Little research measuring the effects of Reading fiction. This paper presents results from a research project that measured the effects of increased reading of fiction on attitudes and preferences important for economic development, for youth (aged 15-25) living in villages in south-western Burkina Faso. The early results from the program were very clear: after two and a half months of reading (from mid-May to early August), which involved delivery of twelve different books, there were no differences on any of four measured outcomes (trust, contribution to public goods, risk and patience) between those participating in the reading program and the control group. Much as advocates of reading fiction would like to believe that reading transforms lives, deepens empathy, and develops better intuitions about the interior lives of others, the reality is more likely to be that effects are small or short-lived.

Keywords: Reading, Fiction, Africa, Burkina Faso, Trust, Public Goods, Social Preferences

*Funding for the research came from a Fulbright Research grant, and hosting and collaboration from the Institut National des Sciences des Sociétés of Burkina Faso is gratefully acknowledged. Profs. Alain Sissao and Félix Compaoré have been fine collaborators and hosts. Research assistance from Sanou Dounko, Koura Donkou, Ousseni Kourweogo, and Boni Bessiamien was tremendously important for the success of the research project. Potential conflict of interest should be addressed. The author since 2001 has been an unpaid director and officer of Friends of African Village Libraries (www.favl.org), a small non-profit that encourages the establishment and support for rural libraries. Given that experience and commitment, the non-significant findings in this paper presumably add to the credibility of the findings.
It seems plausible that if something as simple as a book can leave the impression that one's life has been changed, then perhaps it is powerful enough to cause changes in brain function and structure.

Berns, Blaine, Prietula, and Pye (2013)

1. Introduction
The cover of the 2011 *Handbook of Research on Children’s and Young Adult Literature* features an illustration by Raina Telgemeier. A girl on a camping trip has just finished reading a powerful graphic novel about the atomic bomb’s effects on Hiroshima. She is disconsolate, sitting on a dark hillside. As her mother approaches, the girl mutters, “I think that book ruined my life.” Her mother replies, “Maybe it actually made your life better. You just haven’t realized it yet.”

Teachers, librarians and parents all over the world promote reading of literature because they think reading will have positive, life-changing effects for adolescent readers. The magnitude of these supposed effects, however, remains unmeasured. Is there reason to believe in the likelihood of the title-- *Literature will save the planet*-- of a recent book by Ammons (2010)?

Literature will save the planet, presumably, by changing the attitudes, preferences, ideologies, culture, identity, modes of thinking, and a host of other mental habits and processes. But perhaps literature will not play an important role in changing, let alone saving, the planet. Perhaps literature does nothing more than provide readers with entertainment, respite and solace. Neither Ammons nor the chapters in the *Handbook of Research on Children’s and Young Adult Literature* offer evidence that reading literature has a measurable impact, despite that being one of their major preoccupations. This interesting and important question seems to have been neglected by many academic disciplines. It appears that only recently have social scientists begun to explore measurement of the effects of reading fiction. Recent published research has found significant positive effects from reading on a variety of measures of empathy and “theory of mind.” Most of the findings, however, refer to very short term effects. This research is reviewed in Section 2.

If literature has the power to improve people’s lives, the marginal effect might be high in poor, developing countries in sub-Saharan Africa. Adult literacy is especially low in rural villages, and so current youth are the first generation to have extensive access to schooling. However, access to books is limited. Rural areas in most of Africa are not covered by library services. There are almost no bookstores outside of capital cities. The prices of books are prohibitive for rural residents. A typical novel, for example, costs about one week of work at prevailing rural income levels. (Rural per capita incomes in most of rural Africa, outside of South Africa, are about $1 per day, and a typical new book costs approximately $6.) Although few comprehensive surveys of leisure reading habits exist, small scale surveys suggest that levels of leisure reading are low. In an environment of very low levels of reading fiction, the marginal effects of extra reading might be high.

This paper presents results from a research project that measured the effects of increased reading of fiction on attitudes and preferences important for economic development, for youth (aged 15-25) living in villages in south-western Burkina Faso. Youth who expressed interest in participating in a reading program were randomly selected into a treatment or control group. The reading program each week delivered to the villages of participants a selection of short young adult fiction and graphic novels (*bandes dessinées*). The sample sizes for treatment and control group were large: about 250 in each group. The research used standard experimental games to measure four outcomes: inclinations to be cooperative, to trust others, to be patient, and to take risks.
Increasingly, these mental predispositions (and others) have been seen as important in the process of economic development (Algan & Cahuc, 2007; Castillo, Ferraro, Jordan, & Petrie, 2011; Laurent, 2009; P. J. Zak & Knack, 2001).

The early results from the program were very clear: after two and a half months of reading (from mid-May to early August), which involved delivery of twelve different books, there were no differences on any of the four measured outcomes between those participating in the reading program and the control group. Much as advocates of reading fiction would like to believe that reading transforms lives, deepens empathy, and develops better intuitions about the interior lives of others, the reality is more likely to be that effects are small or short-lived. More research with larger and more diverse samples, with other outcomes measures, with larger payoffs, and with longer periods of reading, and other changes, is certainly warranted given the important decisions that polities and donors in Africa may take to increase the access of literature for the general public.

2. Theory of effects of reading on attitudes and preferences

There is no shortage of assertions about the very important likely effects of reading on attitudes and preferences. Wolf (2008, pp. 156-159) in a book section entitled “How what we read changes us over time” recounts several anecdotes of reading Middlemarch and The Brothers Karamazov, and pithily observes that “reading changes our lives, and our lives change our reading.” Her otherwise excellent book on the science of reading is unconvincing in this section. No evidence is presented to support the argument that reading changes people other than her own introspection and that of Manguel (1996), and a neurological finding that expert readers use both hemispheres of the brain intensely when reading (which is not evidence that the brain changes through reading). Presumably, analogous evidence would be found for gossiping, music, painting, cinema, walking in the woods and any other human activity. Introspection suggests that as one ages and engages a social world away from family, thoughts become more complex and nuanced. Johnston (2010, p. 51), to take another example, makes the point:

Wide exposure to the words and stories and ideas of others, in a variety of multimodal forms and genres, is transitive. It influences thinking, visions of possibilities, and the recognition and understanding of choices of behaviour. The stories of others – engaged with in all sorts of ways – represent a dynamic provocation of emotion and experience that spill into and infill the thinking places of personal inner worlds. Reading, writing, speaking, listening – multimodally – help develop a literacy that deepens—thickens, widens, expands—thoughts and thinking; that elasticises the words and images of story to stretch imaginations and inspire dreams.

At this level of generality, though, where any interactive cognitive activity of humans involving language is transformative of humans, there is no actual theory to be assessed.

On way to begin theorizing about the effects of reading is to classify and delimit the large set of possible relevant outcomes. Waples, Berelson and Bradshaw (1940) were among the first to attempt this. They drew inspiration from an extensive record of individual accounts of the effects of reading, left by memoirists and biographers. They suggested five categories of effects, which remain fairly self-explanatory: (1) instrumental effects from acquiring information; (2) self-esteem or prestige effects from validating or generating an identity; (3) reinforcement effects from having

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2 The authors give an extended example of how women’s magazines of the 1930s catered to a desire for self-esteem among well-educated housewives who had foregone prestige from the working world.
an ideology be validated, or generating a conversion; (4) enrichment of aesthetic appreciation; and (5) relaxation and distraction from anxieties.

Many literary-oriented researchers emphasize broad identity and self-esteem transformations that result from reading, greatly extending Waples et al.’s category (2). A few examples are representative of this area of research, which often uses ethnographic and participatory methods. Radway (1984), in her study of reading romance novels, offered a fine-grained exegesis of the discourses that women gave for their reading choices, and their understanding of what happened when they read romance novels. Radway stressed how reading addressed emotional needs. This is a more subtle effect than simple self-validation or boosting of self-esteem; the idea rather is that humans have strong emotional needs that can be satisfied through interaction but also through virtual interaction accessible through reading fiction.

For Appleyard (1990, p. 96), adolescent reading informed the process of discovery of the subjective self, a self that becomes conscious of an external self that is presented to others, and reflects on inconsistencies and contradictions between internal thoughts and external behavior. When prompted, by Appleyard and others, to reflect on reading, American adolescents often talked about their involvement with books and identification with characters, the realism of the description and story, and how a story made them think. Reading helped adolescents become observers of others, Appleyard theorized. Reading complemented and perhaps hastened the normal transition away from the self-centered worldview of childhood.

Sicherman’s (2010) study of women readers growing up just before and during the Gilded Age of the late 1800s in the United States also focused on identity questions. Many women were vexed by the contradiction between their desires to act in the public sphere in a manner that was socially engaged and the discourses of the times that overwhelmingly reinforced an identity of domesticity for women. Sicherman uncovered considerable autobiographical testimony suggesting that adolescent reading was a key factor in enabling some successful women to resolve the contradiction and develop and realize their aspirations. She hypothesized that reading affected self-awareness, determination, self-control and self-esteem. She remarked (2010:2) more generally that the “scarcity of models for nontraditional womanhood has prompted women more often than men to turn to literature for self authorization.” Sicherman supposed that reading prompted the feeling of emotions, and these emotions had enduring consequences on identity.

A final interesting reflection on the effects of reading fictions come from the work of Anderson (1983), who argued that the rise of nationalism was tightly linked to the novel, which produced a sense of belonging to an imagined community that shared the stories and characters. The novel as a literary form proved especially effective in generating deep identification with characters and situations (Ginsburg, 1996). This enabled a representation, in the mind, of types of people (grouped by class, gender, ethnicity, religion or other identity markers) even without actual experience of those persons. Political choices made in the public sphere relied on these representations, and mass communication, especially through novels, meant these representations might be shared. A number of critics have taken issue with Anderson’s broad thesis on the importance of novels and print capitalism (Wogan, 2001). Clark (2006, p. 6) clearly delineated a reason for skepticism: not enough was known about the effects of reading:

... the question of technical, representational efficacy – the bias of certain means and relations of symbolic production towards some forms of imagined identity in preference to others – will not go away. Do we think that the novel and the newspaper

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3 The authors acknowledge a potential dark side to reading (p. 119): "An attitude frequently changes from a subordinate to a dominant position when it is justified by the authority of print."

4 On this last effect, the authors note (p. 123) that "'Reading for fun,' or 'just reading,' is not spectacular; but it is the predominant type of reading."
were more effective, for instance, at generating nationhood than class consciousness?  
... If so, why? For reasons wholly, or even largely, independent of the nature of the apparatus in each case?

Another strand of research in understanding the effects of reading tries to be more precise on the mechanisms through which reading affects identity, self-esteem and empathy. Researchers in this area have tried to unpack the experience of getting “lost in a book.” Reading fiction, in this view, facilitates the construction or modification, in the mind of a person, of a set of understandings or meanings about the social world they live in. The understandings are affected through the experience of a virtual reality, the social and physical interactions evoked by the book (Schubert & Crusius, 2002). Miall and Kuiken (2002), for example, suggest that narrative fiction generates a progression of feelings, culminating in what they call “self-modifying feeling.” Kaufman and Libby (2012) argue that narrative fictions results in a phenomenon they call “experience-taking” where a person’s identity is partially subsumed with that of a literary character. “Transportation” is a key term for describing this mediating psychological process. Reading psychologists have asked what might be the proximate correlates of transportation (Green & Carpenter, 2011; Green, Chatham, & Sestir, 2012; Odağ, 2011; Thompson & Haddock, 2012). Mar et al. (2008) proposed that reading fiction enabled the reader to become much more adept at engaging in complex interpersonal relationships. In their view reading enhanced sympathy for others, that is, reading enhanced emotional intelligence. Reading fiction was like being a participant in a complex simulated social setting, except that time was extremely compressed, and the entire social situation could be experienced in a matter of hours, rather than the years it would take to experience the situation in real time.

There is little consensus on the nature of mechanisms in the brain that operate during the book-reading experience. Berns et al. (2013) used neuroimaging of 19 college students who read a novel (Pompeii, a page-turning thriller and love story set in the shadow of the volcano). According to the authors, there was strong evidence that reading the novel changed certain neural networks and this “suggest[s] a potential mechanism by which reading stories not only strengthen language processing regions but also affect the individual through embodied semantics in sensorimotor regions.” The simulations may be, for example, like memories of actual events, like listening to stories, or like experiencing actual events. It is not known whether the experience of “getting lost in a book” is crucial to the brain’s experience, or how much experiences have to be reinforced through interpersonal discussion, self-reflection, or writing. It is not known how experiences and effects differ when reading different literary forms, or when reading in different languages.

Reading might affect preferences through the content, but also through the experience and reinforcement of self-control that is part of the act of reading.

Finally, it should be noted that reading “technology” will presumably mediate effects of reading on preferences. By reading culture is meant the social institutions that foster deep literacy. These include institutions that create relevant texts: authors, publishers and distributors of novels and stories. Other important social institutions include provisions for teaching of literature in schools, libraries that promote reading, and social approval of reading as a leisure activity. Reading is both solitary and social. The effects of reading, then, vary as the “technology” of reading changes. Long (2003), for example, showed how for many American women reading has been intertwined with membership in social book clubs. The intentional reading with the goal of discussing in an enduring social group presumably has quite different effects on people than random, solitary reading with little discussion. Nevertheless, Long concluded that the effects were still largely in terms of constructing identities. Other “technologies” of reading might include the kinds of literature instructive taught in schools or sought by readers, the growing use of hyperlinks in online environments and e-readers, the availability of websites such as Goodreads and amazon.com reviews that provide ready forums to sample and contribute opinions and reactions to texts, and
the availability of Youtube videos that enable readers to see and hear authors discussing their work. For schoolchildren, reading literature is also closely tied to interaction with teachers.

3. Evidence on effects of reading

Waples (1940) offered a succinct and clear presentation of early evidence about the effects of reading. He first distinguished comparative, broad historical analysis of effects of reading from small-scale analysis of particular reading and particular individuals. On historical studies, Waples was hard-pressed, apparently, to find much more than assumptions, assertions, or fine-grained historical writing that attempted to establish correlation. That is, a couple dozen or so monographs reviewed by Waples were structured in the following way: during this historical era, these books were read, so the books must have had an effect on the era. Some authors went further, according to Waples: Spengler (1932) arguing that the decline of the west was due to reading newspapers and abandoning "the bookworld, with its profusion of standpoints that compelled thought to select and criticize"; the French Revolution from reading pamphlets, according to Collins (1928); and arguments that social reforms in early America were influenced by fiction reading (1939; T. G. Wright, 1920). On the whole, no convincing case was made that reading actually had any of the supposed effects.

Waples et al. (1940, p. 108) noted that there had been, by 1940, numerous studies of how reading could change attitudes for college students. The studies overwhelmingly examined short-term effects: "The studies have repeatedly shown that reading can change attitudes." But the studies, for Waples et al., lacked external validity. Were college students representative of the general population? In thinking about the effects of reading, Waples et al. also briefly reviewed studies about whether and how people remembered what they had read. Some studies measured very short term effects, and other studies tried to track longer-term individual effects, for particular persons. Some suggested memory of reading was "reconstructed."

Waples et al. (1940, p. 113) also seemed to have been the first to note an important omitted variable bias for observational studies of reading:

Many studies of the behavior effects of reading have made clumsy interpretations because their secondary character has been ignored. Without knowing the relation of the attitudes to the behavior, the causal influence of the content is not plainly identified. This criticism, in more general terms, points to a common tendency for students of behavior to neglect readers' predispositions as a factor in the observed effects of reading.

What they appear to mean is that most reading, even at a group level, is self-selected--adolescents read stories of adolescent angst--and so causal effects are hard to identify. A few pages later they reiterate the point (p. 118): "Because the prestige effect [reading a book validates identity or attitude] must be inferred from the readers' predispositions and from the content, we need to understand the readers' traits and the publications read before we can safely conclude that the reading increases prestige."

Because observational studies are so prone to self-selection and omitted variable bias, estimates of the effects of reading are more likely to be valid if reading conditions are manipulated in experimental settings. Recent experimental research suggests that the virtual experiences or simulations of the social situations encountered in books do change, at least in the short term, attitudes and preferences. Hakemulder (2000) conducted a meta-analysis that confirmed a strong correlation between reading and attitudes of empathy towards others. In subsequent experimental work, he exposed subjects to stories in narrative and non-narrative forms, and found that narratives generated stronger feelings of empathy. Mar and Oatley and co-authors (R. A. Mar et al., 2008; Raymond A. Mar, Oatley, Hirsch, Paz, & Peterson, 2006) likewise found that subjects responded differently to narratives, and also responded differently when they were explicitly asked
to “get lost in the book,” compared with subjects who were asked to take notes on structure while reading (and thus unable to “lose themselves”).

4. Economic preferences: Measurement and significance
Economists and psychologists often use the term “social preferences” to encompass the wide variety of predispositions that people have regarding outcomes that affect their economic interactions. These include: trust, patience, risk-taking and risk-avoidance, altruism, cooperation, competitiveness, equality, fairness, tolerance, self-control, innovation, and respect for property. For example, many people exhibit preferences for inequality aversion and fairness, and weigh the benefits from various choices in terms of how they affect both their own well-being, the well-being of others, and the relative changes of own and other well-being. These social preferences may be attitudes or reasoned preferences devoid of value judgment. Social preferences may sometimes be tightly bound with identity (carpe diem, for example, as a way of living for a marginalized group), but often they cross-cut identity groups. A literature has established a significant neurological component to these preferences, and there is also evidence from twin studies that these preferences are in part heritable.

Recent scholarship on economic development has addressed two important questions: are economic preferences correlated with economic outcomes across social groups, and do economic preferences in social groups vary in predictable ways with events and interventions. Practically speaking, the research agenda is to see whether economic preferences matter, and whether they can be intentionally manipulated. Some research focuses on long-lasting, large-scale experiences and cultural transformation with implications for economic preferences. Other research focuses on medium-term changes in economic preferences, induced by significant or salient events, or induced through experimental manipulation of program interventions.

There is no consensus on the set of preferences that are most relevant for economic outcomes. Four preferences or dispositions—trust, cooperation for public goods, patience and risk aversion—have been the subject of much research—though there are many other preferences as noted above. Research on preferences has been revolutionized by the widespread adoption of experimental games to measure preferences (Humphreys & M.Weinstein, 2009; Levitt & List, 2007). The remainder of this section briefly reviews the literature on these four “economically-relevant preferences.”

Trust
Generalized trust, usually thought of as the willingness to trust others in the ordinary interactions of economic life, has been studied extensively as an economic preference of considerable importance for economic development (Dearmon & Grier, 2009; Glaeser, Laibson, Scheinkman, & Soutter, 2000; Stolle, 1998). Trust has been measured through surveys, where the World Values Survey and Afrobarometer, for example, have asked respondents about their levels of trust.

Empirical analysis by Nunn and Wantchekon (2011) linking contemporary mistrust in African ethnic groups to exposure to the slave trade has taken pride of place as the exemplar of this research agenda on a large geographic and historical scale. They argued that increased exposure to the slave trade as measured by the ethnicity of slaves transported across the Atlantic and Indian Ocean slave trades during the centuries before abolition resulted in enduring folkways of mistrust (towards strangers and kin). In order to control of possible endogeneity (low trust societies may have been raided more) the used a measure of the distance from the coast as an instrumental variable. A number of other papers have pursued similar approaches. Nunn presented evidence that religious conversion in the late colonial period significantly affected religious beliefs well into the present. These beliefs may be correlated with economic preferences. Gallegoa and Woodberry (2010) indeed found that Christian missionary exposure caused long-run changes in education attainment.
Using an observational non-experimental, instrumental variables approach, Francois, Fujiwara and van Ypersele (2011) found that states that experienced banking deregulation and hence subsequently higher levels of inter-firm competition, had greater increases in trust as measured by responses to survey questionnaires.

Trust has also been measured through experimental games, where the standard trust game has become a benchmark for the experimental literature (Croson & Buchan, 1999; Noel D. Johnson & Mislin, 2011). In the trust game, a person has the choice to keep an endowment, typically provided by the experimenter, or send it to an anonymous person whose social identity may be revealed by the experimenter (person in the same group, person of same ethnicity or gender in the locality, etc.). If the first person sends part of the endowment, it is then multiplied by a factor (2 or 3 are typical factors for the multiplication) and “received” by the other person, who then will be offered the option to return part of the value received to the sender. The greater the expectation a person has that receivers will return more than is sent, the more should be sent. The more is sent on average, the more one might say that people trust persons of that social identity, relative to another group of persons or relative to another social identity of receivers.

Johnson and Mislin (2011) reported on a meta-analysis of 162 trust games.

Many studies have shown differences in trust across social groups (Henrich, 2000; Henrich et al., 2005). Sutter and Kocher (2007) found evidence (from Germany) that behavior in trust games did not change much after age 16, though children exhibited much lower trusting behavior. Harbaugh and Krause (2000) found that when playing repeated social preference games, young children tended to increase their giving while adults tended to decrease their giving. Cipriani, Giuliano and Jeanne (2007) found, in a public goods game, no correlation between choices of parents and elementary school children for a small sample of African American and Hispanic residents of Washington, D.C. Studies of twins, however, have suggested that behavior in trust games is partly heritable (Cesarini et al., 2008). Combining pre-existing differences and experimentally-induced framing, Castro (2008) found quite different outcomes between Italian and English players in experimental prosocial games, and found that knowledge of the nationality of other players changed behavior.

Randomized control trials have increasingly examined impacts of interventions on levels of trust. Possibly the most dispositive set of experiments have been those that showed that exposure to oxytocin generated large changes in trust levels (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005; Paul J Zak, Kurzban, & Matzner, 2004). This research and subsequent research has established a clear biological basis for part of the interpersonal variation in trust. Numerous experimental studies also show that there are significant "framing" effects that generate different average levels of trust when experimenters manipulate the game environment. The framing leads people to change their economic preferences (relative to the control group) for at least the duration of the experimental session. Cronk (2007), found that when Maasai players in a standard trust game were “framed” with a rhetorically powerful, locally well-known and complex concept called osotua, their transfers were significantly different from a control group. Jakiela (2009) and Dasgupta (2011) demonstrated that responses to dictator and ultimatum games depended on whether endowments were the result of luck or whether they were “earned” through completing tasks assigned by the experimenter. Cassar, d’Adda and Grosjean (2012) found that framing trust

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5 Much research in this literature suffers from the problem of clustering of game playing groups: often experimenters are comparing behavior from a handful of groups, and assuming that framing or other differences account for variation across group behavior. The sample sizes, in other words, are sometimes as small as two (one group framed, the other not). Since the experimental conditions cannot be identical (different times, different people in the group) any variation (a loud cough) also explains the difference across the groups.
games with prior games that manipulated an experimental “quality of market institutions” generated less trust when the institutions were lower quality.

A related literature has contributed to the broad agenda of accurate measurement of economic preferences by comparing responses in experimental games to responses to standard survey questions (especially regarding trust and civic engagement). Early efforts to correlate responses for the same persons across the different techniques suggested that respondents interpreted game and survey questions and situations differently (Glaeser et al., 2000). Capra, Lanier and Meer (2008) explored the issue further, and found that correlations varied with types of trust questions and types of experimental games. Naef and Schupp (2009) suggested a modified three part set of trust questions correlated more strongly with the strategies played in experimental trust games. Lonqvist, Verkasalo, Walkowitz and Wichardta (2011) showed that choices in a trust game were stable over a one year period for a sample of German university students (though the one-year-later sample suffered from likely response bias in that only 20% of the original sample participated in the second round of the trust game a year later).

Both Schechter (2007) and Barr (2003) noted that the amount sent in the standard trust game was probably a reflection of both trust and willingness to undertake risky behavior. They suggested that when explaining cross-sectional variation in trust, choices in experimental games that elicit risk-taking behavior (or other measures) should be included as controls. One of the more interesting findings of Johnson and Mislin (2011) was that the randomization of rewards that was common in experimental settings in order to obtain more data and choices at low cost, likely confounded trust with risk-aversion. They suggested that experimental games that randomized payments, then, might be interpreted as lower bounds for generalized trust.

Contributions to public goods
Societies around the world have to work together, cooperatively, to provide public goods. Public goods are usually defined as goods that are available to all members of a social group without regard to their contributions towards obtaining the public good. That is, public goods are non-excludable (everyone benefits) and non-rival (one person getting the public good does not diminish another person’s enjoyment of the public good). Typical public goods at the local level are such services as water and sewage systems, roads, schools, and health clinics. Public goods often are provided through voluntary, as opposed to tax, contributions. They also are often voted upon before subjecting citizens to taxation. Individuals then must overcome their selfish propensity to free-ride on the contributions of others. A disposition or preference for providing the community with public goods may be mutually-beneficial even if individually against strict self-interest.

Unlike trust, contributions to public goods and the propensity of people to favor public goods is often observed directly. There appear to be large differences in average behavior in willingness to contribute to public goods. Fearon, Humphreys and Weinstein (2009) found that even limited exposure to participatory development projects had sizable short term effects on people’s willingness to contribute to local public goods.

Willingness to contribute to public goods can also be measured in experiments. The typical experiment endows a group of individuals, and enables them to contribute part or all of their endowment to a common pot that will then be shared equally among members of the group. The public good aspect is that the contributions are multiplied by a factor smaller than the number of members of the group. Thus each individual’s contribution implies a “return” less than one, so each member of the group individually would prefer to free-ride and not contribute. Obviously, if few contribute then there is little benefit from the public good. The more people contribute, the more the group is collectively better off.

The public goods game has been played in many settings around the world (Angeon, Magdalou, & Célimène, 2013; Ensminger, 2004).
Risk preferences
Binswanger (1981) was among the first to measure risk preferences using experimental methods (real-payout lottery games). Schechter (2007) and Barr (2003) measured risk preferences with very simple measures analogous to the trust game: the player decided how much of the initial endowment to risk, and received some multiple (from zero to three, typically) of the amount bet according to a random outcome (throwing a die).
Dave, Eckel, Johnson, and Rojas (2010) found that for low math ability the simple Binswanger choice generated risk aversion preferences that were relatively stable over time.
Lonnqvist, Verkasalo, Walkowitz and Wichardt (2011) showed that a questionnaire of hypothetical risky choices that were relevant for developed country contexts (driving, careers, sports) was more stable than lottery choice elicitation (even if for real stakes), and was also correlated with sending behavior in the trust game. They concluded that “nonincentivised questionnaires based on so called Likert statements in which subjects specify their level of agreement to a certain statement” may be more stable and valid measures of risk preferences.
Observational data offers some confirmation that aggregate dispositions to take risk vary across social groups and over time (Malmendier & Nagel, 2011).

Patience
Impatience, sometimes modelled as hyperbolic discounting, where a person underestimates the ability of future selves to be patient, has long been thought to be an important preference for development (Becker & Mulligan, 1997; G. Clark, 2008). Greater patience means a greater willingness to undertake investments. Godoy, et al. (2004) conducted experiments in patience for monetary and candy rewards among Amerindian society in the Amazon basin and found very high discount rates.

5. Experimental methods
In April 2013, Friends of African Village Libraries initiated a project to promote reading among youth (aged 15-24) of Tuy province in southwestern Burkina Faso. Flyers were distributed in 40 villages inviting applications from youth who had completed the CM1 level (5th grade) and who were interested in participating in the program. 696 applicants submitted completed applications by the deadline for consideration, 295 were randomly selected to participate in the program, and 262 were randomly selected to be in a control group. The random selection was stratified by nine clusters of villages, in order to ensure an even distribution of workload for program assistants. The sample is thus a clustered random sample of self-selected applicants, and so is not representative of the broad population, but rather is representative of the target population of youth who are likely interested in reading. Appendix 1 gives more details on the sample selection.
Those in the program group began the reading program in mid-May. Each week they received a short novel for reading. The novels were selected by FAVL staff based on experiences with young readers in seven community libraries in the region. All novels were by African authors, written for youth or young adults, and available in the main bookstores of Ouagadougou. (There are almost no bookstores outside of Ouagadougou, and no bookstores in Tuy province.)
Prior to the beginning of the program, all applicants received a free copy of a short graphic novel, Kouka: Le Rancon de la Corruption, about corruption in Burkina Faso. The graphic novel was produced by an NGO called RENLAC that promotes awareness of corruption and investigates specific instances of alleged corruption. The graphic novel series Kouka is now comprises ten different short stories, and is written and illustrated each year by a local Burkinabè illustrator selected through an open competition. Thousands of copies are printed and made available to NGOs throughout the country.
A week after the distribution of Kouka, program and control group applicants were invited to participate in experimental game sessions held in their villages. Applicants were given several
days advance notice of the games, and a brochure describing how the games would be played, with examples, was distributed to each applicant. Multiple sessions were held in each of the nine village clusters. Applicants received SMS messages notifying them of the games. Applicants were told they would receive 500 FCFA (approximately $1 dollar at current exchange rates) for sure, and have a possibility of earning between 500-1000 FCFA more.

The first round of games was held in the last week of May 2013. Game sessions lasted approximately two hours, and up to 40 participants could play at a time. Games were held in a large room with individual chairs for each applicant, provided either by the local mayor or by the school director. Only research assistants and participants were allowed in the room during the time of the games. Participants were asked to turn off their mobile phones during the games, but many did not. A research assistant carefully read through instructions for how to play the games, and gave several examples of each game and how payoffs would be calculated. Examples featured people earning a lot and people earning a little. The vast majority of players nodded attentively as the games were explained. Games were played one at a time, and the next game explained again before playing. Participants were informed at the beginning of the session that only one game would be selected for payout. The game was selected randomly by a participant drawing a number out of a bag with cards numbered for each of the four games. Realizations of chance outcomes (for risk and patience games) were also determined through public random selection. While payoffs were calculated, participants completed a short questionnaire and reading comprehension test with multiple choice questions.

The rains came early to the region, and just as the games were scheduled heavy rains started falling. Local farmers understand there is a small window for planting, and many parents required their households to work planting and clearing fields. Nevertheless, of the program and treatment participants, 440 participated in the games, a participation rate of 79%.

The program then delivered novels and reading material to program assistants who lived in each village. Assistants set up one day each week for collection and distribution of books. In addition, if a person did not come to the distribution day, assistants would deliver books to their homes. Most youth in the area have bicycles, and so time to exchange books was probably only about 15-30 minutes per week.

In late July, youth in the treatment and control groups were again invited to participate in a round of experimental games. Only small modifications were made to the game protocol to increase efficiency. The game choices were copied in a booklet form, for example. The games were held in the last days of July and early August. Attendance was similar to the May games, with 426 participants attending, for a participation rate of 76%.

6. Balance in sample characteristics
Table 1 presents summary statistics of the applicants, according to their assignment into treatment or control or non-assignment. Across the fourteen indicators, there is only one difference that is strongly statistically significant. Comparing whether an applicant was a subscriber to a local library, the program group had fewer subscribers than those not selected into any group. This appears to reflect the large number of applicants not selected in Sara, where many youth were subscribers to the library. Excluding Sara, the difference is no longer significant. Since there is no difference between the program treatment group and the control group, this imbalance would not seem to be of great consequence for the estimate of the effects of the reading program.

Table 1 provides a profile of the applicants. About 40% were female, and the average age was about 17.5 years (there were many more secondary students applicants than applicants from older youth no longer in school). Applicants had on average almost 7 years of schooling. The minimum for applicants (though not verified by checking school records) was five years of schooling. Applicants were asked to note on their applications how many books they had read in the previous month, and to list the titles of up to three books they had read in the previous month.
The average number of books read varied from .48-.71, and only about 30% had read at least one book. Respondents listed on average about .40 titles, and only about 20% could actually write at least one title. About 25% of applicants indicated they were subscribers to the community library (located in four of the village clusters and relatively inaccessible to most of applicants in other village clusters). About half of the applicants indicated they had their own mobile phones, and most others indicated they knew a relative, friend or neighbor with a mobile phone and could provide the number. More than half of applicants were from the Bwa ethnic group, the group indigenous to the region. About one quarter of applicants misspelled the French word for the occupation of their mother or the occupation name of their father. Typically, they spelled the occupations phonetically. Missing such standard words (the equivalent of writing housewife as “howswiv” and farmer as “farmore”) suggests the lack of leisure reading. Leisure reading at the very least would bring about greater familiarity with spelling of common words. The short questionnaire for applicants asked about trust. The question was the French version of the standard question asked on the World Values Survey (“Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?”). Less than one-third of applicants indicted agreement that people could be trusted. There were no differences across the treatment and control and non-selected groups.

7. Descriptive statistics of choices in experimental games

The choices that youth in Tuy made in the four experimental games were reasonable and within the range of choices found of other societies. There appeared to be no reason that youth in Tuy were remarkably different from other populations playing similar experimental games.

Figure 1 presents the distribution of amounts sent in the trust game. Each participant was told they had an endowment of 500 FCFA, and could send to their anonymous partner any part of the endowment (in units of 100 FCFA). The figure superimposes the bars representing the frequency of choices for the first round of experimental games in May (in black) with those from the second in August (in gray). The distributions are fairly close, with some shifting of towards smaller distributions in the August round. The modal amount sent was 200 FCFA. About 10% of youth sent the full 500 FCFA.

Participants were told that the amount sent would be multiplied by three, and that recipients could then remit some of that amount back to the sender. Each player was asked to complete a short form indicating how much they would remit for each of the possible amounts sent by the sender. The fractions of the amounts sent that were returned (sometimes called an indicator of trustworthiness) are presented in Figure 2. The bars represent the frequency of the weighted average of the fraction returned. Again, the black bars are for May and the gray bars for August. For each participant, the amount that they returned, as a fraction of the amount sent, was calculated for each amount that the sender could have sent. These were then added together, weighted by the amount compared with the total amount sent. There were five cases (100, 200, 300, 400 and 500) and obviously the most weight was placed on the 500 FCFA case. If the person returned a lot in that case their overall average would be higher, since it was given more weight. The figure shows that by and large youth in Tuy province were very trustworthy. The fraction was greater than one for more than two-thirds of the players, and this did not vary between May and August. If participants had known the distribution of the average fractions remitted, they might have been even more trusting.

Figure 3 presents the distribution of amounts sent in the public goods game. Each participant was told they had an endowment of 500 FCFA, and could contribute (in units of 100 FCFA) to the group. The other members of the group were anonymous. Contributions would be

6 « D’une manière générale, penses-tu qu’on peut faire confiance à la plupart des gens ou qu’on n’est jamais assez prudent quand on a affaire aux autres? »
added up and multiplied by three, and then divided equally among the six members of the group, regardless of whether or how much they had contributed. The figure superimposes the bars representing the frequency of choices for the first round of experimental games in May (in black) with those from the second in August (in gray). The distributions suggest that there was a significant increase in strategy for 15% of the participants. In May about 25% of participants contributed the full 500 FCFA to the group, by August this percentage had dropped to just fewer than 10%. The modal contribution went from 500 FCFA to 100 FCFA. Plainly participants had learned that many of their co-villagers were free-riding in the public good game, and they decided to contribute much less.

The patience game is more complicated to present with summary statistics. Table 2 summarizes the information presented to the participants. There were 28 choices in the game, seven choices in each of four groups. Participants decided, for example, between 1000 FCFA to be paid at the end of the game session, or 1200 FCFA to be paid the following day. Another choice involved receiving 900 FCFA in two days or 1200 FCFA in 30 days. If a person chose to not wait, receive the 900 FCFA immediately, for this latter choice, one could compute the implied annual interest rate for the 30% return that would occur over the month (i.e. about 360% annual rate if not compounded). Figure 4 presents the distribution of the implied discount rate for when the person “switched” to being patient. The first bar with a discount factor of .92 implied they chose to be patient immediately and for all subsequent choices in the group. About 50% of participants made that choice. Others chose to be impatient. All of the implied “overnight” discount rates are quite high; in principle respondents ought to be patient for every single choice they confronted. For example, the first choice in each group involved receiving 1100 FCFA soon or 1200 FCFA later. The discount factor was .92. This factor could be turned into an implicit discount rate depending on the amount of time that would elapse between the sooner choice and the later choice. Choosing 600 FCFA today rather than 1200 FCFA in five days would imply an enormous discount rate. While the overwhelming majority of participants did choose to be patient in almost all cases, about 10% of participants chose to be very impatient and receive money immediately rather than waiting. This percentage roughly doubled when the choice was between receiving money in two days or else waiting 30 days. That is, the further off the future payment, the more participants chose to receive payment quickly, even though the implied discount rate was still very high. The choices displayed in Figure 4 suggest that most people had very low discount rates. While about 50% were impatient for the very first choice in each block (1100 FCFA soon versus 1200 FCFA later) as soon as the “soon” payment declined a bit they immediately switched to being patient. About 80-90% had discount factors higher than .75. It should be noted that about one third of the participants were inconsistent in their choices (alternating impatient and patient within groups, which does not abide by any logic). These inconsistent players are excluded from the analysis in Figure 4.

The risk game was quite simple. Participants were asked to choose one of six different gambles, as presented in Table 3. In each case, the two outcomes had 50% probability of being selected (blue and white tokens were picked out of a sack). If participants chose gamble 1, they received 1,000 FCFA for sure. If they chose gamble 6, then at the end of the session if the risk game were the selected payoff game, a token was chosen from the sack. The tokens were chosen for each player who had selected a risky choice. If the token were blue, the player would receive only 100 FCFA. If the token were white, the person received 2500 FCFA. Figure 5 presents the distribution of choices, for the May and August games. The modal choice was gamble number 1 (the no-risk choice) in both sessions. In the August session, many more people who had previously chosen the intermediate risk choices decided to switch to the safe choice.

8. **Impact of program on reading and economic preferences**
Numerous interviews with program participants during May, June, July and August suggest the program operated smoothly. There were few reports of significant delays in obtaining books.
Occasionally heavy rains made roads impassable, or made it difficult from participants to gather on the normal day for the book exchange. Rural residents are well-used to these delays, and they appear not to have negatively impacted program participation.

There were of course significant non-compliers with the program: that is, youth who had indicated an interest in reading but then either did not show up to obtain and exchange books, or who borrowed books but clearly had not read them. Program assistants estimated these non-compliers to be approximately 10% of the program group. Perhaps another 5% of the sample also dropped out of the program over the course of the summer, as opportunities for work took them to artisanal gold mines, the major towns of Bobo-Dioulasso or Houndé, or to stay permanently on family farms in the regions. Attrition rates were hard to estimate because when contacted absent participants would often indicate their absence was temporary and they intended to return to participate in the program.

In the experimental games in August, participants were again asked about their reading habits. The questions asked readers to name and briefly identify a character in up to three books they had read in the previous two months. They also were asked to write the title of the book. Program participants were far more likely to list titles and characters in these questions. About 55% listed two or three titles, 10% listed only one title, and only 35% listed no titles. By Contrast, 82% of youth in the control group listed no titles, and only 13% listed two or three titles. The percentages were very similar for characters in the books; program participants could name characters, control group youth could not. The program was effective, then at exposing individuals to books.

Table 4 shows the results for simple linear regressions with five different outcome measures. For each of the outcome variables, one regression includes only the treatment status (equal to one if the participant was in the reading program), while the other regression includes a full set of controls, including baseline selections of the individual in May at the beginning of the period. The main explanatory variable of interest in the regressions is the dummy variables for whether the student participated in the reading program. Other explanatory variables include the gender, age and ethnicity (whether Bwaba, with other participants being Mossi) of the person. Two other variables include whether the person had started secondary school at the time of the first application in April (regardless of whether the person continued or had finished), and a variable measuring whether the person was coming from a village with a library. The regressions with controls also include dummy variables for each of the game session, since responses may have been influenced by the setting or particular nuances in the explanation of the games. Standard errors are adjusted by the clustering on participants into these zones.

The first outcome variable is the August measure of reading. The dummy variable for selection for program participation is positive and very significant. Program participants on average listed 1.2 more titles than non-participants in the control group. Participants who had finished primary school and started secondary school also listed on average approximately .55 more titles.

The next four sets of columns give the results for the four experimental games. None of the four outcomes from the experimental games was affected by selection for the reading program. Women were more likely to contribute to the trust game and public goods game, by about 25 FCFA on average. Those who had completed primary school were actually less likely to contribute in the trust game. For the measurement of patience, a different measure has been used. The outcome variable is a simple count of the times that a person selected to be patient, for the 28 scenarios that were presented. The mean of the variable overall is about 19, and the standard deviation is 7.8. Again, selection for participation in the program did not affect the choices that youth made when playing this game. Older youth were slightly less likely to be patient, while Bwaba youth were considerably more likely to be patient (by about .3 standard deviations). Finally, for the choice of different gambles, again selection for the reading program did not affect the outcome. Women were
slightly less likely to choose risky outcomes. In all four instances, choices taken in May 2013 were the strongest predictors of choices in August 2013. At the least, this suggested that the games were indeed capturing stable preferences of people. People were consistent in their choices.

Scatter plots of predicted values help to visualize the effect (or non-effect) of the reading programs on reading frequency and outcomes of experimental games. In Figures 6-9, the x-axis measures the residual from a regression of the outcome at the time of the initial round of experimental games in May 2013. These outcomes are regressed on the explanatory variables gender, ethnicity, age and schooling. So the x-axis values are the component of the student’s outcome in May 2013 that is not explained, or not predicted, by their gender, ethnicity age and schooling. It is a measure of their “unexplained” reading and game playing choices. On the y-axis is the residual of the regression of the August 2013 choices (reading and experimental games) on the explanatory variables (gender, ethnicity, age and schooling). The y-axis measures the unexplained portion of the choices in August. The scatter plot shows the two residuals for each student. Each point on the scatter plot represents a student, and their residual choices in May 2013 are measured on the x-axis and their residual choices in August 2013 are measured on the y-axis. A regression of the two residuals using the whole sample yields the same estimated coefficient as the May 2013 explanatory variable on the August 2013 outcomes as in the regressions in Table 4. In the figures, the residuals for the reading program participants have been represented by the hollow squares, and the residuals for the control group youth are represented by the gray diamonds. The two fitted lines are the regressions of the May 2013 residuals on the August 2013 residuals for each of these two groups. As can be seen clearly, the fitted line for the reading program youth (the dashed line) is everywhere above the fitted line for the other group in Figure 6, indicating that the program led to greater reading (well, more titles listed, at the least). But for the game outcomes, Figures 7-9 show that the fitted lines for program and control groups overlap almost exactly. There was no difference in how youth played the experimental games.

Finally, Table 5 reports the results of regressions where instead of the indicator for selection into the reading program as explanatory variable, the treatment variable is used as an instrumental variable for the measure of how many book titles the youth listed in the August 2013 questionnaire. About 20% of the control group read a lot, and 20% of the treatment group did not read at all. The assignment into the program is an appropriate instrumental variable: it clearly affected how much youth were reading, and presumably it would affect the outcome through reading, rather than some simple “selection into program” effect, particularly since the program lasted many months. As Table 5 suggests, however, youth who indicated that they read more titles did not play the experimental games any differently from those who read little.

9. Conclusion
The results presented in this paper suggest the need for considerable more work examining the question of how reading fiction affects people’s economic preferences. The question is important for both practical public policy reasons (Should more libraries be built? Should the secondary school curriculum promote leisure reading?) and theoretical reasons (How does “transportation” in reading affect, over the long-term, a person’s economic preferences?).
<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Program group</th>
<th>No group - not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>st. dev.</td>
<td>mean</td>
</tr>
<tr>
<td>Is person female?</td>
<td>0.41</td>
<td>0.49</td>
<td>0.39</td>
</tr>
<tr>
<td>Age in May 2013</td>
<td>17.39</td>
<td>2.55</td>
<td>17.34</td>
</tr>
<tr>
<td>Years in school</td>
<td>6.79</td>
<td>1.95</td>
<td>6.48</td>
</tr>
<tr>
<td>How many books read past month</td>
<td>0.63</td>
<td>1.10</td>
<td>0.48</td>
</tr>
<tr>
<td>Read at least one book</td>
<td>0.32</td>
<td>0.47</td>
<td>0.28</td>
</tr>
<tr>
<td>How many titles listed?</td>
<td>0.42</td>
<td>0.89</td>
<td>0.32</td>
</tr>
<tr>
<td>Listed at least one title</td>
<td>0.22</td>
<td>0.41</td>
<td>0.20</td>
</tr>
<tr>
<td>Subscriber to library?</td>
<td>0.20</td>
<td>0.40</td>
<td>0.19</td>
</tr>
<tr>
<td>Does person have phone?</td>
<td>0.45</td>
<td>0.50</td>
<td>0.41</td>
</tr>
<tr>
<td>Has access to phone?</td>
<td>0.47</td>
<td>0.50</td>
<td>0.49</td>
</tr>
<tr>
<td>Is person Bwaba?</td>
<td>0.60</td>
<td>0.49</td>
<td>0.56</td>
</tr>
<tr>
<td>Did mispell mother job?</td>
<td>0.24</td>
<td>0.43</td>
<td>0.22</td>
</tr>
<tr>
<td>Did mispell father job?</td>
<td>0.15</td>
<td>0.36</td>
<td>0.18</td>
</tr>
<tr>
<td>Agrees that can trust people?</td>
<td>0.25</td>
<td>0.43</td>
<td>0.28</td>
</tr>
<tr>
<td>Observations</td>
<td>262</td>
<td>295</td>
<td>139</td>
</tr>
</tbody>
</table>

Note: (A) and (B) indicate whether significant statistical difference between treatment and control group, or treatment and non-selected group, respectively. * p<0.10 ** p<0.05 *** p<0.01. Means and standard deviations and differences between means are calculated for each variable calculated with maximum data available; some variables, such as books read in previous 30 days, had missing observations. Complete data across all variables is available for 664 of the 696 applicants; means and differences using only the complete sample are qualitatively very similar.
Figure 1: Histogram of amounts sent (trust game)

May 2013 = black, August 2013 = gray

Figure 2: Histogram of weighted average of amounts returned in trust game

May 2013 = black, August 2013 = gray
Figure 3: Histogram of amounts sent (public good game)
May 2013 = black, August 2013 = gray
### Table 2: Choices in the patience game amounts of FCFA

| Choice | group 1        | group 3        |  |  |  |
|--------|----------------|----------------|  |  |  |
|        | Today | Tomorrow | After two days | After nine days |
| 1      | 1100  | 1200     | 1100 | 1200 |
| 2      | 1000  | 1200     | 1000 | 1200 |
| 3      | 900   | 1200     | 900  | 1200 |
| 4      | 800   | 1200     | 800  | 1200 |
| 5      | 700   | 1200     | 700  | 1200 |
| 6      | 600   | 1200     | 600  | 1200 |
| 7      | 500   | 1200     | 500  | 1200 |

*Note: Participants were invited to circle an amount (either the sooner or later amount) for each of the 28 choices.*

### Figure 4: Distribution of discounts rates implied by patience game

May 2013 = black, August 2013 = gray

**Today or tomorrow**

**Two days or nine days**

**Today or five days**

**Two days or 30 days**

Note: A discount rate of .92 signifies the person is patient and prefers 1200 FCFA later instead of 1000 FCFA today.

A discount rate of 0 signifies the person wants every amount immediately.
Table 3: Choices in the risk game

<table>
<thead>
<tr>
<th>Gamble</th>
<th>Outcome</th>
<th>Payoff FCFA</th>
<th>Chances</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blue</td>
<td>1,000</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>1,000</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>Blue</td>
<td>900</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>1,300</td>
<td>50%</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
<td>800</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>1,600</td>
<td>50%</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
<td>600</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>1,900</td>
<td>50%</td>
</tr>
<tr>
<td>5</td>
<td>Blue</td>
<td>500</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>2,200</td>
<td>50%</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
<td>100</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>2,500</td>
<td>50%</td>
</tr>
</tbody>
</table>

Figure 5: Histogram of choices in the risk game
May 2013 = black, August 2013 = gray
Table 4: Effects of selection into reading program (treatment) on various outcomes

<table>
<thead>
<tr>
<th></th>
<th>How many titles read in June and July</th>
<th>How much FCFA contribute trust game</th>
<th>How much FCFA contribute trust game</th>
<th>Count of times chose to be patient</th>
<th>Risky choice, increasing from 1-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>In reading program group?</td>
<td>1.208***</td>
<td>1.234***</td>
<td>1.251***</td>
<td>-1.098 -1.039 -1.192</td>
<td>-0.0309 -0.0375 -0.00753</td>
</tr>
<tr>
<td></td>
<td>(6.35)</td>
<td>(7.43)</td>
<td>(7.76)</td>
<td>(-1.18) (-1.23) (-1.43)</td>
<td>(-0.18) (-0.21) (-0.05)</td>
</tr>
<tr>
<td>Is person female?</td>
<td>0.00916</td>
<td>-0.0105</td>
<td>26.72**</td>
<td>34.82** -24.77*</td>
<td>1.080 0.355 -0.397* -0.268</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(-0.09)</td>
<td>(2.30)</td>
<td>(2.61) (1.82)</td>
<td>(1.13) (0.47) (-1.88) (-1.58)</td>
</tr>
<tr>
<td>Age in May 2013</td>
<td>-0.0331</td>
<td>-0.0357</td>
<td>1.168 -1.353</td>
<td>1.366 1.159 -0.479** -0.365*</td>
<td>-0.0117 -0.0487</td>
</tr>
<tr>
<td></td>
<td>(-1.64)</td>
<td>(-1.76)</td>
<td>(0.32)</td>
<td>(0.50) (0.40)</td>
<td>(-2.38) (-2.18) (-0.33) (-1.79)</td>
</tr>
<tr>
<td>Is person Bwaba?</td>
<td>0.227</td>
<td>0.174</td>
<td>4.959 3.350</td>
<td>10.12 3.604 2.654** 2.693***</td>
<td>0.00449 -0.117</td>
</tr>
<tr>
<td></td>
<td>(1.39)</td>
<td>(1.18)</td>
<td>(0.28)</td>
<td>(0.44) (0.17)</td>
<td>(3.19) (3.61) (0.03) (-1.06)</td>
</tr>
<tr>
<td>Started secondary school?</td>
<td>0.597***</td>
<td>0.547***</td>
<td>-35.32** -24.06</td>
<td>-33.12 -10.70 -0.189 0.406</td>
<td>0.00690 0.187</td>
</tr>
<tr>
<td></td>
<td>(4.93)</td>
<td>(4.77)</td>
<td>(-2.71)</td>
<td>(-1.78) (-0.71)</td>
<td>(0.04) (1.29)</td>
</tr>
<tr>
<td>Does village have a library?</td>
<td>-0.322</td>
<td>-0.353*</td>
<td>-18.04 3.306</td>
<td>-52.91 -26.65 3.988 0.634</td>
<td>-0.607 -0.797</td>
</tr>
<tr>
<td></td>
<td>(-1.71)</td>
<td>(-1.87)</td>
<td>(-0.66)</td>
<td>(-1.66) (-1.02)</td>
<td>(1.79) (0.18) (-0.68) (-1.08)</td>
</tr>
<tr>
<td>How many titles listed?</td>
<td>0.170**</td>
<td></td>
<td>0.291***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in May 2013</td>
<td>(2.71)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much FCFA contribute trust game</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in May 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraction contributed public good game</td>
<td></td>
<td></td>
<td>0.306***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in May 2013</td>
<td></td>
<td></td>
<td></td>
<td>(7.25)</td>
<td></td>
</tr>
<tr>
<td>Count of times chose to be patient</td>
<td></td>
<td></td>
<td></td>
<td>0.377***</td>
<td></td>
</tr>
<tr>
<td>in May 2013</td>
<td></td>
<td></td>
<td></td>
<td>(6.07)</td>
<td></td>
</tr>
<tr>
<td>Risky choice, increasing from 1-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.331***</td>
</tr>
<tr>
<td>in May 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(4.89)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.411***</td>
<td>1.144***</td>
<td>1.119***</td>
<td>217.3*** 201.6*** 152.5***</td>
<td>217.7*** 220.3*** 120.8***</td>
</tr>
<tr>
<td></td>
<td>(3.44)</td>
<td>(4.35)</td>
<td>(4.19)</td>
<td>(22.85) (3.73) (3.40)</td>
<td>(17.97) (4.74) (2.56)</td>
</tr>
<tr>
<td>Observations</td>
<td>426 423 423</td>
<td>423 420 373</td>
<td>425 422 372</td>
<td>426 423 383</td>
<td>425 422 380</td>
</tr>
</tbody>
</table>

Notes: t statistics in parentheses * p<0.05 ** p<0.01 *** p<0.001; session dummy variables included but not reported; errors clustered by game session.
Table 5: Effects of reading more fiction (instrumented with treatment status) on various outcomes

<table>
<thead>
<tr>
<th></th>
<th>How much FCFA contribute trust game</th>
<th>How much FCFA contribute public goods game</th>
<th>Count of times chose to be patient</th>
<th>Risky choice, increasing from 1-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many titles read in June-July?</td>
<td>11.60 (1.16) 5.622 (0.58)</td>
<td>10.20 (1.20) 7.233 (0.96)</td>
<td>-0.947 (-1.40) -0.933 (-1.56)</td>
<td>-0.0130 (0.09) 0.00904 (0.08)</td>
</tr>
<tr>
<td>(instrumented by treatment status)</td>
<td>(2.34) (2.33) (2.60) (1.85)</td>
<td>(1.16) (0.49)</td>
<td>-0.398** -0.268</td>
<td></td>
</tr>
<tr>
<td>Is person female?</td>
<td>26.55** (2.34) 21.53** (2.33)</td>
<td>34.27*** (2.60) 24.33* (1.85)</td>
<td>1.094 (1.16) 0.366 (0.49)</td>
<td>-0.398** -0.268</td>
</tr>
<tr>
<td>Age in May 2013</td>
<td>1.581 (0.47) -1.178 (-0.52)</td>
<td>1.663 (0.62) 1.348 (0.50)</td>
<td>-0.511*** -0.391*** (-2.70)</td>
<td>-0.0120 (-0.39) -0.0500** (-2.05)</td>
</tr>
<tr>
<td>Is person Bwaba?</td>
<td>2.948 (0.17) 1.940 (0.13)</td>
<td>9.293 (0.42) 2.650 (0.13)</td>
<td>2.698** (2.52) 2.887*** (3.58)</td>
<td>0.0354 (-0.27) -0.100 (-0.99)</td>
</tr>
<tr>
<td>Started secondary school?</td>
<td>-41.67*** (-2.67) -27.68 (-1.48)</td>
<td>-37.87** (-2.13) -14.38 (-0.92)</td>
<td>0.260 (0.24) 0.977 (1.04)</td>
<td>0.0338 (0.20) 0.197 (1.28)</td>
</tr>
<tr>
<td>How much FCFA contribute trust game in May 2013</td>
<td>0.291*** (6.20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much FCFA contribute public goods game in May 2013</td>
<td></td>
<td>0.312*** (7.34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count of times chose to be patient in May 2013</td>
<td></td>
<td></td>
<td>0.379*** (6.94)</td>
<td></td>
</tr>
<tr>
<td>Risky choice, increasing from 1-6 in May 2013</td>
<td></td>
<td></td>
<td></td>
<td>0.331*** (5.11)</td>
</tr>
<tr>
<td>Constant</td>
<td>187.0*** (3.79) 146.1*** (3.67)</td>
<td>206.7*** (4.52) 110.9** (2.50)</td>
<td>24.83*** (8.95) 16.01*** (5.77)</td>
<td>3.675*** (8.08) 3.077*** (6.57)</td>
</tr>
<tr>
<td>Observations</td>
<td>420 373 422 372 423 383 422 380</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: t statistics in parentheses * p<0.05 ** p<0.01 *** p<0.001; session dummy variables included but not reported; errors clustered by game session.
Figure 6: Youth reading program participants increased # of titles listed as read in previous 30 days

Figure 7: Youth reading program participants exhibited no difference in trust game contributions
Figure 8: Youth reading program participants exhibited no difference in discount rates

Figure 9: Youth reading program participants exhibited no difference in risk-taking
References


