Collaboration Skills Recovery in Formerly Oppressed Communities: Reparations for Psychological Health Rehabilitation

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It is well known that countries that rank highly in capitalism, democracy and rule of law (CDR) have high levels of real per capita gross domestic product (GDP) adjusted for purchasing power parity (GDPppp). But collaboration is essential for rule of law, and collaboration skills may have been lost due to prior stresses such as forced labor, excessive discrimination, and chemical exposures in formerly oppressed communities. These psychologically debilitating outcomes can be transmitted to human progeny via negative epigenetic transgenerational psycho-sequela, indefinitely. The result can be low academic and job performance, low income, self-harm, poor community relations and high aggression. The purpose of this paper is to explore the design of a framework for psychological health rehabilitation reparations designed to regain lost collaboration skills as an alternative to direct payments to individuals. The novelty of the paper is the framework for the recovery of collaboration skill through mandatory sport and music training and gene therapy that is the basis of extraordinary economic growth and higher average income nationwide.

Keywords: collaboration, CDR economic model, gross domestic product, sports and music training, gene therapy, psychological health rehabilitation reparations

INTRODUCTION

It is well known and understood that certain communities in America, known currently as minority communities, suffered extreme oppression and deprivation such as forced labor, excessive discrimination, and exposure to chemicals. Members of formerly oppressed communities who have lost their collaboration skills will be unable to perform in school education, job, and social activities and in the economy as a whole. There is a loss of human capital ideas of imagination and creativity, GDP and average income nationwide. There exists many already legal school sports and music activities, and gene therapies approved by the FDA. The purpose of this paper is to explore the design of a framework for psychological health rehabilitation reparations, free of cost, to regain lost collaboration skills as an alternative to direct payments to individuals. The rehabilitation reparations approach via mandatory sports and music training and gene therapy versus payments to individuals is consistent with the old adage: give a man a fish and he can eat for a day, teach him to fish and he can eat for a lifetime. Restorative justice seems only fair, but the majority of citizens

might object to cash reparations to individuals, especially when the target oppressed community was aggrieved centuries ago and the oppressors are no longer alive. Rehabilitation of the target oppressed community will raise capitalism (C), democracy (D) and rule *of* law (R), (CDR), GDP and average income for all citizens.

An epigenetic effect may be a randomly distributed outcome. While an epigenetic outcome may adversely affect progeny of an oppressed community, it may miss particular individuals. The individuals that are unaffected may lead what appear to be normal lives. They may be very successful. But they too may object to reparations, saying for example, if I can do it why can't everybody do it? They may just be a small percent of the community. For example, consider reparations for let's say 80% of 40 million African Americans = 32 millions, and 10% of 300 million European Americans = 30 millions. These numbers are similar. Assume that money will be set aside for mandatory sports and music training for school children and gene therapy for adults. Both groups will benefit. Therefore, there might be little if any group objections to rehabilitation reparations.

We define capitalism (Adam Smith, 1776) as the process of organizing capital. It is measured by total market capitalization. Democracy and Rule *of* law are rank measures. Rule *of* law is a catalyst that attracts capital and protects democracy. Democracy is a catalyst that creates additional pathways for the optimal deployment of capital (see Figure 1 and Ridley, 2020a, 2023). Almost all (90%) of real per capita gross domestic product (GDP) adjusted for purchasing power parity (GDPppp) is explained by the capitalism, democracy, rule *of* law (CDR) economic growth model (80%), and to a much lesser extent, natural resources (6%) and geography (4%). Democracy and rule *of* law (per Magna Carta) are revolutionary (not evolutionary) inventions. Ridley & Nelson (2022a) give a temporal account of the genesis of rule *of* law and its critical dependence on collaboration.

Figure 1 depicts an assumption of positive epigenetic generational psycho sequela (EGPS). The assumption is that genetic traits are normal and collaborative, and function to acquire and operate rule *of* law. Formally oppressed countries can experience negative EGPS traits and little collaboration and rule *of* law (Ridley & Nelson, 2022a, 2022b).

Collaboration and cooperation are often confused. As is the role of rule *of* law and property rights in economic growth and development that depend on collaboration. Therefore, we establish the following definitions.

Cooperation is a plan and execution thereof by participants, each with their own personal self-interest and economic gain in mind yet yielding unintended mutual benefits.

Collaboration is a plan and execution thereof by participants for their intentional mutual benefit of shared goals, objectives, and rewards.

Unlike animals, human beings have the unique ability to collaborate. Although animals can cooperate, they cannot collaborate (Tomasello, 2001, 2005, 2009, 2012, 2019). Adam Smith (1776) advocated division of labor and trade. This is consistent with cooperation in which individuals pursue their self-interests. The standards of living of the parties to trade all rise, albeit unintentionally. There is ordinary economic growth and development, and GDP does increase. Collaboration on the other hand is associated with investment in human ideas of imagination and creativity (Ridley & Nelson, 2022a, 2022b). Collaboration is responsible for invention, innovation, and entrepreneurship. Entrepreneurship is the process of starting a business, typically a startup company offering an innovative product, process or service. Knowledge is about the past and entrepreneurship is about the future. When individuals collaborate, they intentionally contribute to shared goals and expect mutual benefits.

Research Questions

Can lost collaboration skills be recovered? Can the recovery mechanism be mandatory sports and music training and or gene therapy. If that is the case, is there a framework by which psychological health rehabilitation reparations can be implemented to raise CDR, and thereby GDP and average income nationwide?

The remainder of the paper is organized as follows. The next section is an explanation of standard of living and its relationship to the CDR economic growth model that was developed recently to explain

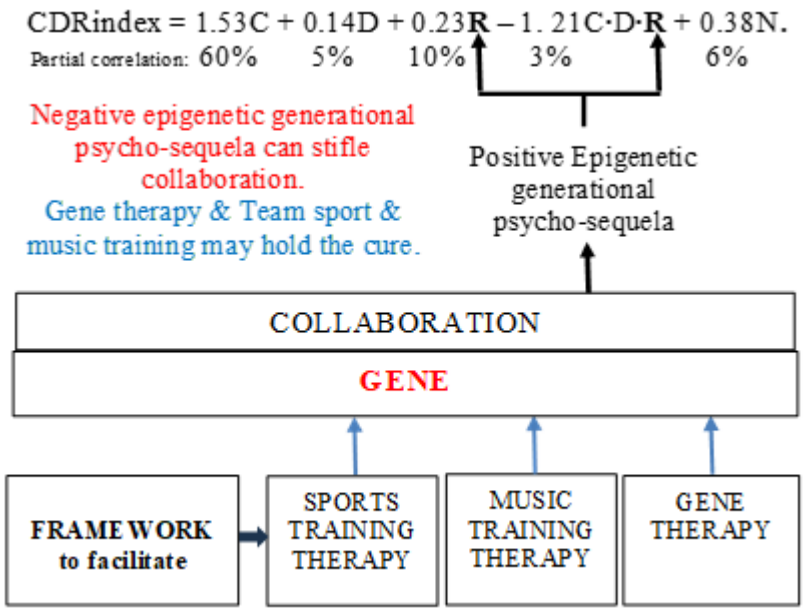
GDPppp globally. An appendix is provided to illustrate the CDR economic growth model. This is followed by discussion on education and gene therapy methodology for developing and recovering collaboration skills. Justifications and benefits to society are explained next. This is followed by a suggested framework for psychological health rehabilitation reparations. The final section contains some conclusions and suggestions for future research.

STANDARD OF LIVING FROM CDR

The following two paragraphs are reproduced from Ridley, Lee and Nelson (2023) for the readers convenience. This paper is follow-on research that is seeking solutions to the problems identified in that prior publication, based in pertinent part on the CDR economic growth model. There is a commonly held view that wealth just exists, and government's role is to distribute it. That such wealth is embedded in natural resources. In reality, the source of wealth is the exogenous human capital of imagination and creativity. A capitalist is a person who seeks to maximize the payment they receive for their own personal effort. Every rational person is a capitalist. This is consistent with the Ayn Rand (1990) objectivist libertarianism epistemology and theory of value. It is also consistent with the Friedman & Friedman (1980) consequentialist libertarianism epistemology. Every individual is accorded maximum freedom to choose so long as he does not interfere with the freedom of others. Capitalism is the process of organizing capital for profitable investment. Human capital is converted into endogenous capital stock of knowledge, machines, recordings, computer programs, etc. These are used to convert raw materials into goods and services. This is measured as real per capita gross domestic product (GDP) adjusted for purchasing power parity (GDPppp). Also known as standard of living. After consumption, depreciation (of machinery) and obsolescence (of knowledge), this contributes to wealth. Knowledge is finite, ignorance is infinite. Human imagination and creativity are unlimited therefore wealth is unlimited. There may be a fixed number of atoms in the world but the number of ways that they can be combined is incalculable.

Various economic growth models for estimating GDP have been developed over time. The most recent by Ridley (2019, 2020a, 2023) shows that GDPppp can be calculated from the CDRindex given in Figure 1 (reproduced from Ridley, Lee and Nelson, 2023) and Figure 5 in the Appendix (reproduced from Ridley, 2019, 2020a, 2023). The coefficients of the C, D and R policy variables are positive and contribute to GDPppp. However, there is a negative interactive term (-1.21CDR). It measures the degree to which excess democracy can delay decision making and decisions, and over regulation can prevent investment opportunities, unnecessarily, and thereby reduce GDPppp. Thoreau (1849) said "that government is best which governs least".

FIGURE 1
YEAR 2014 CDR INDEX AND MODEL FOR 79 COUNTRIES



Note: This model was re-estimated for years 1995 to 2016 with similar results. For additional comments on the countries included see Ridley (2020a, 2023). R requires collaboration skill which requires positive epigenetic generational sequela. Reproduced in part from Ridley, Lee and Nelson (2023), Ridley (2023).

EDUCATION

Intelligence as measured by intelligent quotient (IQ) is important and beneficial on an individual level. But Ridley (2020a, 2023) show that collaboration trumps IQ as a predictor of standard of living nationally (see also Surowiecki, 2005). Although collaboration is an innate property unique to human beings, the skill must be developed. Ridley (2022, 2023) and Ridley & Nelson (2022b) suggested that cures for lost collaboration skill due to negative epigenetic effects be attempted. The PISA 2015 tests for collaboration can be used to monitor the progress. PISA 2015 defines collaborative problem-solving competence as "the capacity of an individual to effectively engage in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution and pooling their knowledge, skills and efforts to reach that solution." Singapore trains school children in the skill of collaboration, scoring highest on PISA test (OECD, 2015). Children form numerous synaptic connections, then prune the connections down to what matters to them. This type of plasticity is prominent in children prior to complete synaptic pruning. Therefore, their success in the PISA test is not surprising. This early training strategy may also bode well for adult collaboration.

Physical education (PE) is a common option around the world. But, with the exception of perhaps Singapore, it is not mandatory. See Ridley, Lee & Nelson (2023) for a full discussion on sports-based programs for education in Singapore, in addition to the normal, and collaboration. See also Lee & Ridley (2025) for a full discussion on music education programs and collaboration in Singapore, and the gene for collaboration. It is not surprising that Singapore scores highest on the PISA test for collaboration.

Ridley & Nelson (2022a, 2022b) show that collaboration is essential for the development of rule of law. This implies that there is value in the proposed mandatory collaboration skills training via school team sports and music. Figure 2 depicts mandatory sports and music training to promote collaboration that facilitates rule of law, that attracts capital and protects democracy that deploys capital for the generation of GDPppp. Consider for example soccer. Games cannot be won consistently by even the most stellar

individual performances. Only collaboration can succeed. Children will observe this fact for themselves, in addition to listening to their PE teachers.

THE COLLABORATION GENE

Animals and human beings can cooperate, but only human beings can collaborate (Tomasello, 2023). The monkey is a primate with many similarities to human beings. Harlow & Zimmermann (1958) and Harlow, Dodsworth & Harlow (1965) conducted research in which baby rhesus monkeys were removed from their mother and not allowed to breastfeed and therefore not allowed to bond with their mother. They prevented tactile comfort to the infants. Subsequently, the monkeys could not form relationships with other monkeys, were aggressive toward them and their own progeny, and engaged in self-mutilation. We assume that this would cause loss of collaboration in human beings. There are oppressed communities that were subjected to forced labor and separation of mothers, fathers, and children, and they would lose their ability to collaborate. The limbic area of the brain is responsible for emotion, behavior and survival instinct. The prefrontal cortex of the brain regulates emotion, and plans strategy, collaboration and creativity. It sees oneness over separation. These are the areas of the brain that may have been affected (Neuroscience of Collaboration | blueprintofwe).

We now know from mice studies (Avital, Aga-Mizrachi & Zubedat, 2016 and Avital & Aga-Mizrachi, 2022) that there is a gene for cooperation. By inference we will assume that there is a gene for collaboration. The impact of the gene on collaboration skill is discussed by Lee & Ridley (2025). The presence of this gene opens the possibility for gene therapy to recover collaboration skill. If the gene is turned off due to ancestral environmental exposure to stresses such as forced labor, excessive discrimination, or exposure to dangerous chemicals, there may be a negative epigenetic transgenerational psycho sequela wherein collaboration skill is lost. To simply correct and remove the environment that caused low collaboration effects in the first place and hope for the best will be to no avail. A curative intervention is required if collaboration skill is to be recovered. Our proposal is that the government of the United States pay for research necessary to identify the specific collaboration gene, and the research to find the appropriate medical biological treatment that will turn the gene back on.

Not only is the theory of genes and the genetic underpinnings of disease such as hemophilia and sickle cell disease understood, but scientists also have the tools to tackle the task for genetic engineering to fix genetic maladies via gene editing (Gaj, Gersbach & Barbas, 2013; Sander & Joung, 2014; Niu, Zhang & Chen, 2014). The gene that causes sickle cell anemia has been detected and is now known. Bad genes can be turned off and good genes can be turned on. The speed with which disease can be detected with messenger ribonucleic acid (mRNA) technology, and cures found is quite impressive. We saw that with the management of the covid-19 virus.

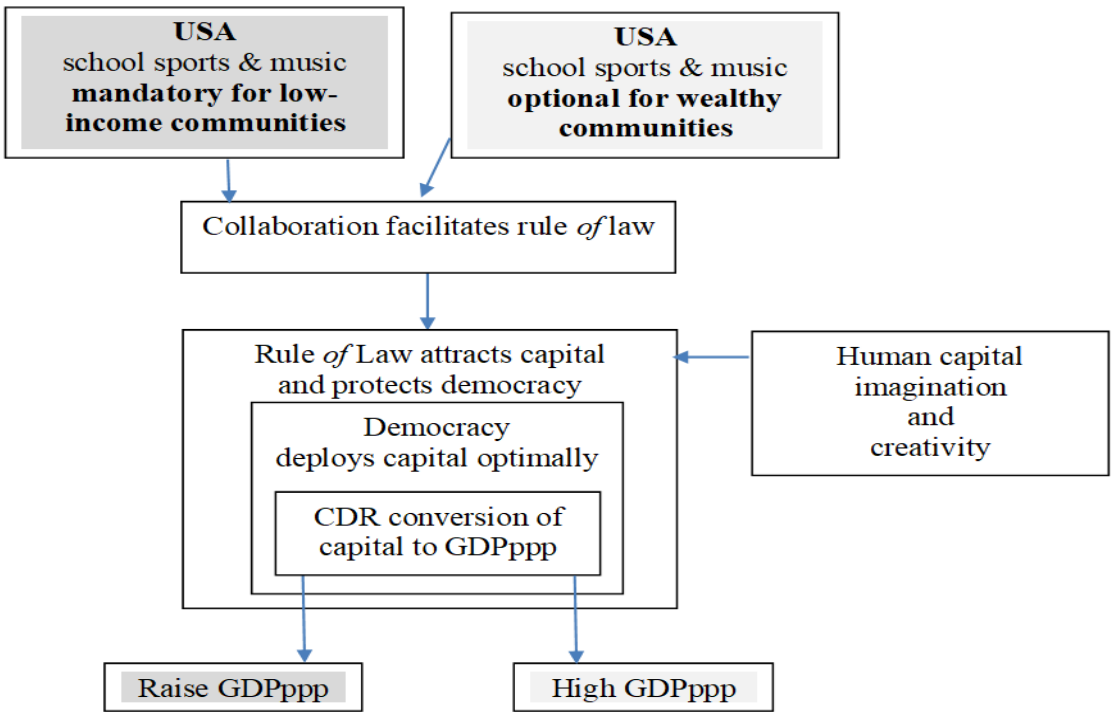
Vaccines prevent 4 million deaths per year. They prevent 322 million illnesses every year. 18.5 million hospitalizations have been prevented. Entire diseases have been eradicated by vaccines. For example, diphtheria and smallpox.

In traditional medicine a medication that cures one patient can kill another patient. Gene therapy is targeted to the genetic source of an illness and tailored accordingly. New technology like mRNA has sped up vaccine production from 100 thousand doses in year 2019 to 800 million doses in year 2021. This method of vaccination is efficacious, clinically, and commercially validated. It has saved 1.5 trillion dollars in the US. For these reasons, mRNA vaccines and gene therapy are the next wave of medical treatments. *The Power and Potential of Genetic Medicine (rbccm.com)*

We would be remiss if we did not advise caution in gene therapy and any attendant unintended consequences. The gene for collaboration may be located in the chromosome range where it does not affect any other human function. Otherwise, there may be side effects. Just as there are in traditional medications. Doctors would need to continue weighing side effects versus benefits and making choices in consultation with patients if the benefits outweigh the side effects. All the side effects may be to cure other abnormalities related to the collaboration but not noticed. Ignoring the loss of collaboration skill deficit is not without side effects. There is a severe reduction in learning performance, job performance, entrepreneurship, and

general economic performance. Ninety percent of the world's population live in abject poverty. Starvation, poverty related illnesses, and premature death are prevalent. This is not a trivial matter.

FIGURE 2
MANDATORY AND OPTIONAL US SCHOOL SPORTS & MUSIC TRAINING TO PROMOTE RECOVERY OF COLLABORATION SKILLS



REPARATIONS AND SOCIETY

There has been a long history of oppression of formerly oppressed Americans and suppression of their movements to restore justice through economic reparations (Assensoh & Alex-Assensoh, 2021; Coates, T. 2014; Lew-Williams, 2018; McCaffrey, 1997; Richards, 1999; Tong, 1971). The crimes against humanity and civil rights were done decades and centuries ago, the actors/aggressors and victims also died long ago, so it might be somewhat challenging to legally prove all cases and determine the fair amount of compensation that each victim's descendant should be awarded. We concur that it is good for the nation and the society to pay reparations for intergenerational harms done to formerly oppressed Americans in order to compensate and restore equity and justice. We argue that, as an alternative, psychological reparations through music, sports, and gene therapies would be morally and ethically appropriate to quench the thirst for restorative social justice and provide greater national outcomes at the societal, community, and individual levels. The psychological and emotional reparations framework, if accepted and implemented in the US, could create an international precedent and provide a pathway for other countries to follow.

The issues of historical injustice, debt and reparations for formerly oppressed communities of Americans have not been resolved (Brooks & Bilmes, 2022; Coates, R., 2004; Coates, T. 2014). Although the United States has quite an extensive and well-functioning system of reparative and restorative justice that has been paying reparations and compensations for decades, the system has not yet addressed the "multi-faceted, intragenerational harms suffered by formerly oppressed Americans" (Brooks & Bilmes, 2022). From the time of the Abolition of Slavery and the Civil war 1861-1864 to the present, a number of movements and institutions such as National African- American Reparations Commission (NAARC),

Institute of the Black World 21st Century (IBW), National Coalition of Blacks for Reparations in America (N'COBRA) and others have been actively calling for reparations long overdue to formerly oppressed Americans for the harms they had suffered from slavery, discrimination, disenfranchisement, etc. and their consequences since the slave trade in the 1600s until present. Our proposal for reparations applies to all formerly oppressed communities, including Irish and English who were enslaved in America (Jordan & Walsh, 2008).

Conflict

The issue of past due reparations for the historical crimes is the dysfunctional conflict that has been dividing the American nation and limiting the human potential of the American people. *Conflict* is defined as a disagreement between two or more individuals or groups because of disagreements about goals, objectives, values, attitudes, issues, perceptions, etc. and competition (Stoner, 1986; Plunkett, Attner and Allen, 2008). Relevant literature reveals mixed results on the benefits and harm of conflict to groups, organizations and institutions in a society. The history of research on conflict reveals that early organizational conflict theorists thought of conflict as dysfunctional to organizations while contemporary researchers agree that conflict is beneficial under some circumstances (Tjosvold, 1991) in that it provides better solutions to the conflicting sides.

A dysfunctional conflict can be categorized into relationship, task, and process types of conflict that are detrimental to institutional and organizational functioning (Amason & Sapienza, 1997; Jehn, 1992, 1997; Pelled, 1996; Pinkley, 1990). Unresolved societal conflicts increase the antagonizing social forces and negatively affect emotional, psychological, and economic wellbeing of society members.

The Only Constant Is … Change

Change is a way of life and the driver for challenging the status quo. Change is defined as "making things different" (Robbings & Judge, 2017, p. 606). It is believed that Heraclitus of Ephesus (535-475 BC) was saying, "change is the only constant" (Reardon, 2017), and indeed, everything on Earth – from a human life to the development of organizations, institutions, societies, and countries – is constantly undergoing change (Hibbing, Smith, & Alford, 2014; Jost, Banaji, & Nosek, 2004). Globally, a vast majority of societies have forces that work toward reforms and accept societal changes - liberal forces - and those who prefer stability and conservation of the societal status quo (Mill, 1991) – conservative forces.

Change could be progressive when recognized trends within society are accepted, and reactionary, characterized by the reversal of social trends and a return to the status ante. Wilson (1973) argued that conservatives may indeed resist progressive change yet accept a reactionary change. Jost et. al. (2009) agree with this view, noting that conservatives under certain circumstances accept reactionary change. Based on these findings, we argue that both conservative and liberal societal forces may cooperate and even collaborate to make social changes happen and accepted, which would be very much needed in the case of paying reparations to formerly oppressed Americans. It would be highly desirable and less painful to the US society to undergo the evolutionary change when accepting calls for historical reparations due to formerly oppressed Americans rather than suffer from any forms of revolutionary changes.

Everything is constantly in a state of flux. There are driving forces that call for change: social and economic trends, technological advances, global competition and politics, and others (Robbings & Judge, 2017). On the opposite side, there are restraining forces at the core of the society that resists change because it sees it as threatening (Duckitt, 2001; Feldman & Huddy, 2014; Jost, 2006; Jost, Glaser, Kruglanski, & Sulloway, 2003a, 2003b; Kerlinger, 1984; Muller, 2001; Wilson, 1973).

Researchers have found that attitudes towards change are considered to be deeply rooted in human psychology. Restraining forces demonstrate higher sensitivity to perceived (and actual) threats that change brings about such as crime, terrorism, death and other dangers to physical, emotional and psychological well-being (Duckitt, 2001; McLean et al., 2014; Oxley, Smith, & Alford, 2008; Vigil, 2010). Those protecting the status quo demonstrate intolerance to uncertainty and ambiguity (Chirumbolo, Areni, & Sensales, 2004; Jost et al., 2003b; Kruglanski & Webster, 1996) and, as a result, they work to preserve,

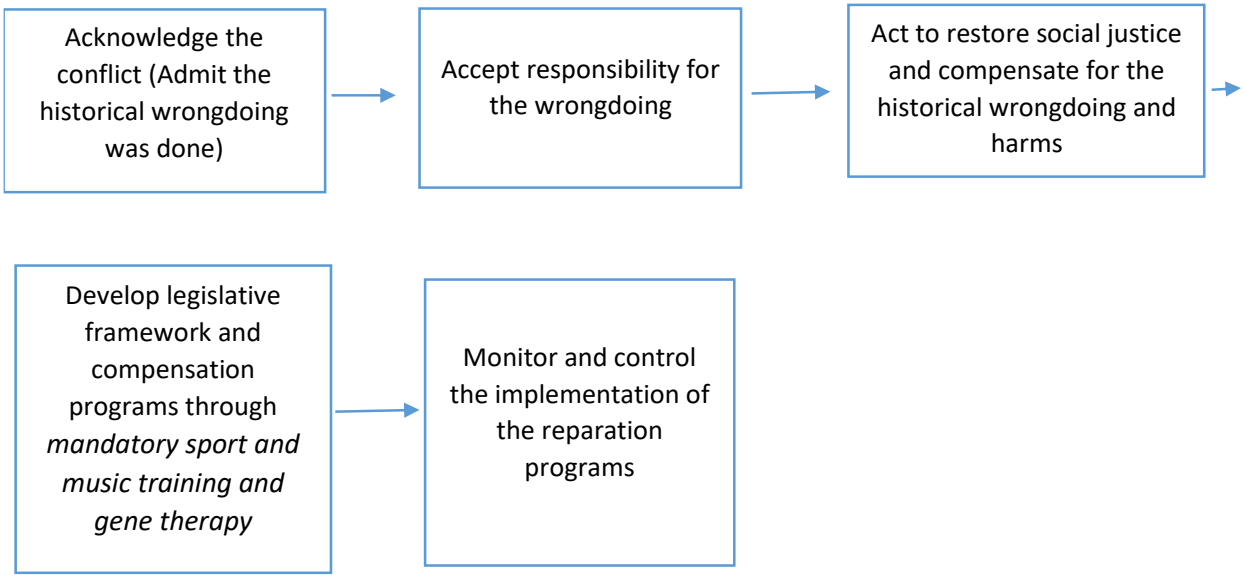
legitimize, and justify the existing social structure and order while suppressing societal changes (Jost, Banaji, & Nosek, 2004; Jost et al., 2003a; Jost, Napier, Thorisdottir, Gosling, Palfai, & Ostafin, 2007).

We argue that the proponents of societal change through payments of reparations to formerly oppressed Americans for the historical oppression should find more effective methods and tools to persuade restraining forces to view these reparations as less threatening, and thus, acceptable. We propose that reparations paid through development and implementation of sports, music and gene therapy programs for those who need reparations would most likely satisfy the demands for restorative justice.

Managing Acceptance of Reparations

A discussion on reparations and economic justice appeals to the core of the financial system of the capitalistic society: debts need to be repaid. Despite the ongoing efforts of a number of National Reparations Organizations such as N'COBRA, Fund For Reparations Now, National African-American Reparations Commission, The Reparations Project, Reparation Generation, Reparations Legacy Project, and others, the calls for restorative justice and economic reparations have not been addressed and satisfied (William Monroe Trotter Collaborative for Social Justice, Harvard Kennedy School, 2024). We propose that the successful development of a legislative framework and subsequent implementation of programs and initiatives could be based on the wider acceptance of such measures by the forces resisting these changes. The key factors influencing acceptance may lie in the psychological and social realms, and thus require efforts aimed at attitude change. Based on the discussion above, we propose the following process flow for managing the acceptance of reparations in the society depicted in Figure 3 below:

FIGURE 3
PROCESS FLOW FOR MANAGING THE ACCEPTANCE OF REPARATIONS



Attitudes are emotionally colored by evaluative statements that reflect how a person thinks and feels about objects, other people, or events **(**Barsky, Kaplan & Beal, 2011; Breckler, J., 1984; Mikels, Maglio, Reed & Kaplowitz, 2011; Rojas Tejada, Lozano Rojas, Navas Luque & Perez Moreno, 2011).

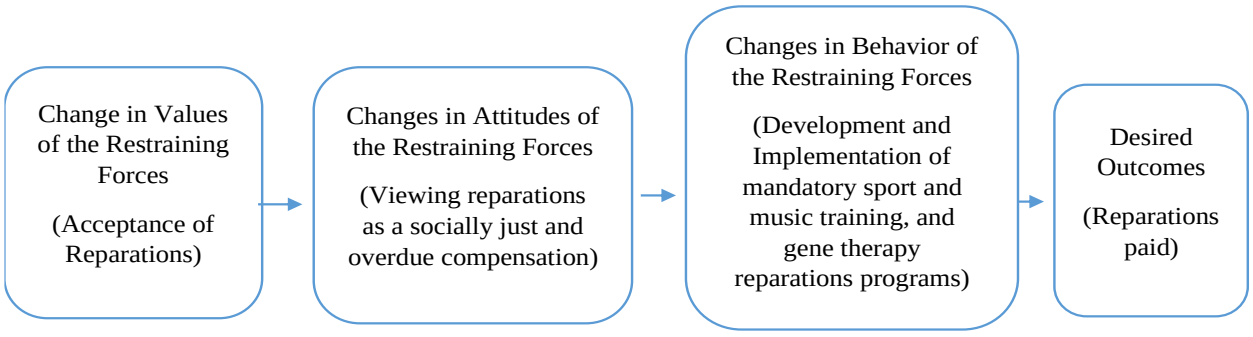
The main, closely related, and mostly inseparable components of an attitude are cognitive or cognition (evaluation), affective or affect (feeling), and behavioral or behavior (action). In societies, institutions and organizations, the linkages between affect and behavior, and cognition and behavior are of particular importance. In other words, will feelings and / or thoughts result in an action(s)? What can influence cognitive and / or affective components of attitudes to result in an action(s)? What could be intended and unintended consequences of those actions?

While researchers in the first part of the 20th century assumed the causality of attitude to behavior, researchers in the second half of the past century challenged that assumption (Wicker, 1969). Although Festinger (1957) argued that attitudes follow behavior, others questioned the mere existence of the linkages among and between components of the attitudes and their influence on behavior (Breckler, 1984). More recently, scholars found that attitudes predict future behavior and confirmed Festinger's claim that moderating variables can strengthen the links **(**Barsky, Kaplan & Beal, 2011; Breckler, J., 1984; Mikels, Maglio, Reed & Kaplowitz, 2011; Rojas Tejada, Lozano Rojas, Navas Luque & Perez Moreno, 2011).

External agents of influence can exude pressure on each component of the attitude system of attitudes, cognitions, and behaviors, and all components can be influenced internally by each other (Zimbardo & Leippe, 1991). The most powerful moderators of the attitude-behavior relationship are *social pressures*, the person's *direct experience* with the attitude, and the *importance* of the attitude to the person. Scholars found that important attitudes reflect a person's system of fundamental values, self-interest, or identification with other individuals or groups a person values. These particular attitudes tend to have stronger relationships to a person's behavior (Ajzen, 2001; Glasman & Albarracin, 2006; Riketta, 2008). Other important social influence factors and forces include persuasion, compliance, conformity, obedience, identity, self-attribution, operant conditioning, and prejudice (Zimbardo & Leippe, 1991).

We argue that in order to attain the desired behaviors (reparations paid), a change in values (acceptance of reparations and compensations for historical oppression and injustices) should occur first, followed by changes in attitudes from negative to positive towards viewing reparations as a socially just and overdue compensation aimed at providing ancestral healing through reparation of intergenerational harms. Figure 4 is a schematic demonstrating a model of the proposed sequence:

FIGURE 4
CHANGE PROCESSES FOR GETTING REPARATIONS PAID



As Antigua and Barbuda's Prime Minister Gaston Browne succinctly called in his letter to Harvard University President Lawrence S. Bacow to "send reparations as recognition and compensation of Antiguan slaves in establishing the Law School", "Reparation is not aid; it is not a gift; it is compensation to correct the injustices of the past and restore equity…Reparation from Harvard would compensate for its development on the backs of our people" (Buchanan & Burstein, 2019; Wilder, 2013).

Resolving centuries' old conflict about the overdue reparations would be quite beneficial to restore social justice for formerly oppressed Americans through evolutionary change and closing the divide in the US society on this issue. We propose that reparations paid through development and implementation of sports, music and gene therapy programs for those who need reparations would most likely satisfy peaceful demands for restorative justice.

CONCLUDING REMARKS

Our research suggests that lost collaboration skills can be recovered. Singapore has demonstrated how mandatory sports and music programs and activities have been used to develop collaboration in its school-age children and grow national wealth. In fact, Singapore had a record low GDP of $0.7B in 1960, and has grown to be among the most prosperous countries in the world as measured by GDP per capita, PPP ($141,500.20 international dollars), the 2nd globally, only after Luxembourg's GDP per capita, PPP of $143,341.5 (World Bank, 2024).

Rosier, Llaugel & Ridley (2024) showed how many US corporations designed jobs to develop human collaboration skills to greatly increase profits. Ridley, Korovyakovskaya & Llaugel (2021) and Ridley(2022a) showed that there is a collaboration deficit worldwide. The result can be low academic and job performance, low income, self-harm, poor community relations and high aggression.

In general, we recommend that developing and poor communities use the framework presented in this paper to develop and implement policies for psychological health rehabilitation reparations to raise CDR, GDP and average income nationwide. We suggest that the US government legalize mandatory sport and music training, and gene therapy as a means of psychological health rehabilitation reparations for formerly oppressed communities. Other people can avail themselves of the therapy. The objective is to raise CDR, GDP and average incomes nationwide. The intended beneficiaries are primarily low-income Americans in particular, and all Americans in general.

Future research may focus on gene therapy and genetic engineering research for accomplishing collaboration skills recovery. Future longitudinal studies on the impact of collaboration from school-age activities and into adulthood employment are needed to examine whether countries can replicate Singapore's way into prosperity through collaboration.

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APPENDIX

From Ridley (2020) the ordinary least squares (OLS) model is $g_i = \beta_0 + \beta_c C_i + \beta_d D_i + \beta_r R_i + \beta_{cdr} C_i \cdot D_i \cdot R_i + \beta_n N_i + \varepsilon_i$, where i represents the ith country, the coefficients and variables are dimensionless, and the errors ε_i are random and normally distributed with zero mean and constant standard deviation. We regress g on *C*, *D*, *R*, and *N* to obtain the ith country estimated g as follows.

$$\text{Year 2014:} \qquad g_i = 1.53C_i + 0.14D_i + 0.23R_i - 1.21C_i \cdot D_i \cdot R_i + 0.38N_i$$

where to determine the relative contributions of *C*, *D*, *R* and natural resources (*N*), we standardize the variables to guarantee upper and lower bounds of $0 \leq g, C, D, R, C \cdot D \cdot R, N \leq 1$ as follows:

g	= (*G* -lowest *G*)/(highest *G* -lowest *G*), *G* represents GDPppp
C (Capitalism)	= (per capita capitalization-lowest per capita capitalization)/ (highest per capita capitalization - lowest per capita capitalization)
D (Democracy)	= (lowest democracy rank-democracy rank)/ (lowest democracy rank- highest democracy rank)
R (Rule *of* law)	= (lowest corruption rank-corruption rank)/ (lowest corruption rank- highest corruption rank)
N (Natural resources)	= (per capita total natural resource rents-lowest per capita total natural resource rents)/(highest per capita total natural resource rents- lowest per capita total natural resource rents).

Democracy and corruption are rank ordered, where the highest = 1 and the lowest = the number of countries. These transformations are all one hundred percent reversible: *G* = g(highest *G*-lowest *G*) + lowest *G*, highest *G*=$83,066 and lowest *G*=$1,112

The CDR model is depicted in the vexillological chart in Figure 5. The CDR model flattens the world and creates a path to widespread and accelerated entrepreneurship.

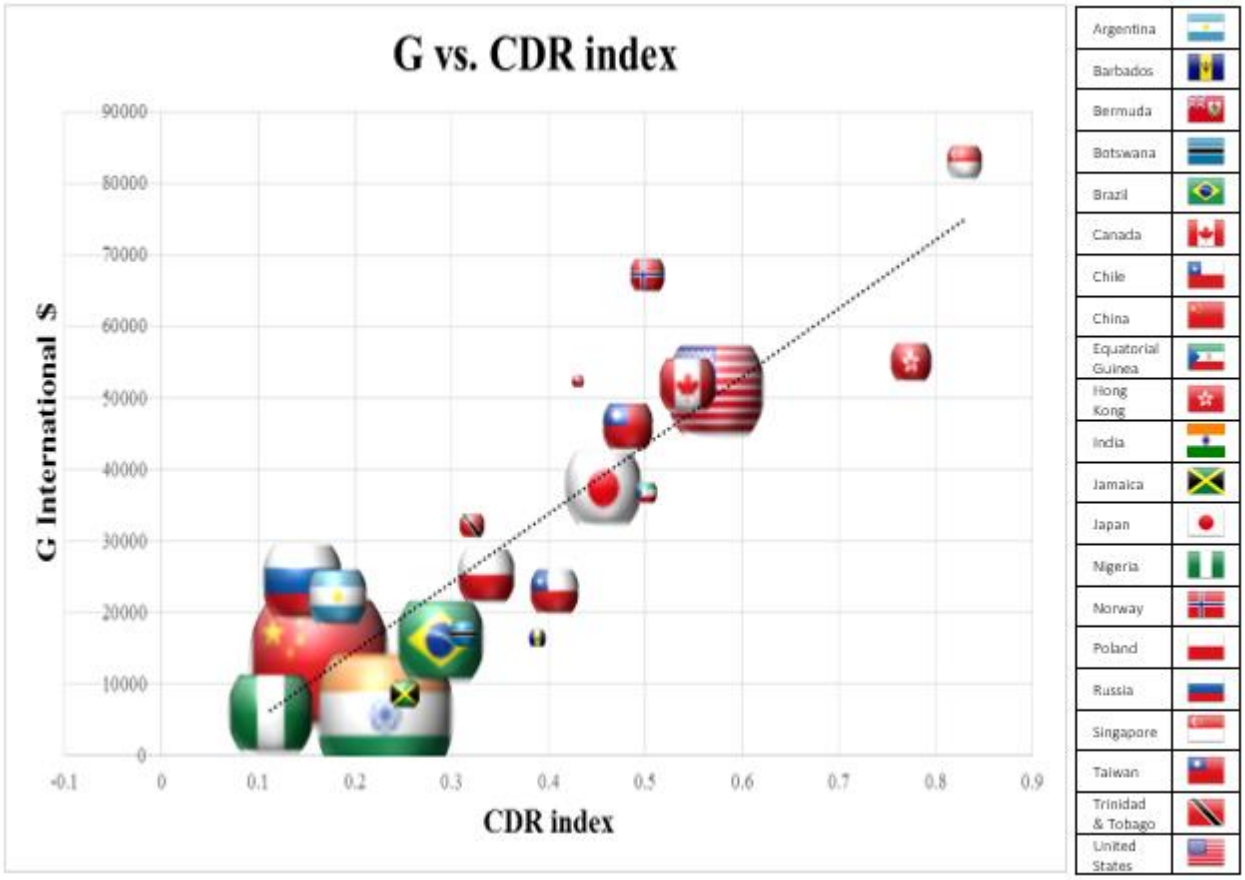
To correct for biased due to the endogenous capital stock component of capital, a two stage least squares (2SLS) estimate is conducted as follows.

The estimated 1st stage least squares model is

$$\hat{C}_i = 0.04 - 0.07L_i - 0.16D_i + 0.22R_i + 1.11C_i \cdot D_i \cdot R_i - 0.02N_i.$$

where $\hat{C}$ is the exogenous entrepreneurship component of capital and the instrumental variable (IV) is exogenous geographic latitude (L_i).

FIGURE 5
YEAR 2014 G VS CDR INDEX FOR 79 COUNTRIES



Note: Year 2014 G vs CDR Index for 79 countries (line). Bubble size (21 countries) is the square root of population. This model was re-estimated for years 1995 to 2016 with similar results. For additional comments on the countries listed see Ridley (2020a, 2023). Click on the bubble graph to see an animation.

The estimated 2nd stage least squares unbiased model for estimating g from entrepreneurship capital ($\hat{C}_i$) is

$$\hat{g}_i = 1.30\hat{C}_i + 0.12D_i + 0.28R_i - 0.98\hat{C}_i \cdot D_i \cdot R_i + 0.39N_i.$$

The partial contributions to GDPppp are as follows,

C: 60%, D: 5%, R: 10%, CDR: 3%, N: 6%, L: 4%.