Enhancing the Lives of Global Youth: Plasticity, Specificity, Non-Ergodicity, and the Promotion of Social Justice

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THE FOCUS OF DEVELOPMENTAL SCIENCE

Developmental science seeks to describe, explain, and optimize within-person (intraindividual) change and differences between people (interindividual differences) in within-person change across the life span.
Developmental science studies human life as it is embedded in time (both ontogenetic and historical) and place (e.g., as in the work of Baltes; Bronfenbrenner, and Elder).

Developmental science, as a field, is itself embedded in time and place.

- **Mid-20th Century**: The universe is uniform and permanent.
- **Late 20th century to today**: The universe is diverse and changing.
The field of child development received formal recognition in 1922-23 through the appointment of a subcommittee on Child Development of the National Research Council.

In 1925, this group became the Committee in Child Development with offices and staff in the National Academies of Sciences. The purpose of the committee was to integrate research activities and to stimulate research in child development. The committee awarded fellowships, initiated conferences, and began publications.

In 1927, 425 scientists were listed in the Directory of Research in Child Development, and that same year the first volume of *Child Development Abstracts and Bibliography* was published.

In 1933, the Committee on Child Development disbanded and passed the torch to the newly organized Society for Research in Child Development (SRCD).
Former SRCD Executive Director John W. Hagen noted (2008, p. 1) that, “Since its inception in 1933, The Society for Research in Child Development (SRCD) has been committed to the application of findings of research on children. The dual principles of the Society are to foster research on child development from the perspectives of all the relevant disciplines and encourage the implementation of findings for the betterment of society's children and families.”

Article 1, Section 1 of the SRCD constitution (1933) states:

“The purposes of the Society shall be to stimulate and support research, to encourage cooperation among individuals engaged in the scientific study of child development, and to encourage applications of research findings.”
1933
Hitler’s “Thousand Year Third Reich”

- January 30, 1933 to VE Day, May 8, 1945

- The world learned about the death and destruction that could be visited on the people of all nations by an individual marked by pathological narcissism and transactional morality.

- Or did it?
“When we give children over to poverty, the poor to hunger, the persecuted to war, and the elderly to abandonment, do we not ourselves do the “dirty work” of death?...If we exclude “the other” from our thinking, each life thinks only of itself, and life itself becomes simply a consumer commodity. Narcissus, the character of ancient mythology, who loves only himself and ignores the good of others, is shallow-minded but does not even realize it. Meanwhile, he is, in a way, the source of a very contagious spiritual virus that turns us into reflections in a mirror who see only ourselves and nothing else. We become blind to life and its power – to life as a gift that is received from others and that to others must be passed on responsibly.”

Pope Francis
Speech to the Pontifical Academy for Life
Vatican City, June 25, 2018
2019
THE WORLD WITHIN WHICH GLOBAL YOUTH LIVE
Seven Deadly “Significant InterNational Stressors” (SINS)

1. Poverty
2. Racism, Sexism, Classism, Ageism, Ethnocentrism
3. Human exploitation
4. Political injustice
5. Health and Health Service disparities
6. Educational inequities
7. Ecological degradation of the planet
The 8th of the Deadly SINS

*The Spread of Machiavellian Character:*

- Character that is marked by narcissism and pathological self-interest; AND
- Cynical manipulation;
- Acceptance of dishonest or immoral behavior in pursuit of a goal;
- Attacking the institutions of civil society; and
- Deceit
The 8th of the Deadly SINS

- Clearly, Machiavellian Character is:
- Totally Reprehensible and Unconscionably Morally Perverse, or
  T.R.U.M.P.
- And, when a person with such character acts to Erode Democracy, our nation and the world have been:
  T.R.U.M.P.E.D.
Can developmental scientists collaborate to enhance the development of youth embedded in settings wherein they face the SINS besetting young people around the world, and perhaps especially in the majority world?
YES!

Through theory-predicated, methodologically rigorous research that – consistent with the SRCD vision of 1933 – applies developmental science for the betterment of the world’s children and families.
RELATIONAL DEVELOPMENTAL SYSTEMS METATHEORY

- The integration of levels of organization, from biology/physiology through culture, the physical ecology, and history
- Developmental regulation across life involves mutually influential individual ↔ context relations
- Adaptive developmental regulations: Mutually beneficial individual ↔ context relations are the basis of positive individual and contextual changes
- Integrated actions, individual ↔ context relations, are the basic unit of analysis within human development
- Temporality and relative plasticity in human development
- Optimism, the application of developmental science, and the promotion of positive human development: The potential for furthering social justice
Plasticity – And The Rejection of Genetic Reductionism
Examples of Genetic Reductionist Models

1. Behavior Genetics
2. Sociobiology
3. Evolutionary Developmental Psychology
4. Five Factor Theory (The “Big 5”) 
5. Neo-Eugenics

All perspectives believe that genes, independent of coactions with the context, shape the defining attributes of humans.
EVOLUTIONARY BIOLOGY
Jablonka & Lamb: Evolution in Four Dimensions

“Molecular biology has shown that many of the old assumptions about the genetic system, which is the basis of present-day neo-Darwinian theory, are incorrect. It has also shown that cells can transmit information to daughter cells through non-DNA (epigenetic) inheritance. This means that all organisms have at least two systems of heredity. In addition, many animals transmit information to others by behavioral means, which gives them a third hereditary system. And we humans have a fourth, because symbol-based inheritance, particularly language, plays a substantial role in our evolution. It is therefore quite wrong to think about heredity and evolution solely in terms of the genetic system.”

Jablonka & Lamb (2005, p. 1)
Pigliucci and Müller (2010): *Evolution – the extended synthesis*

In their extended theory, there is a view of

“genes as followers” in the evolutionary process... evolution progresses through the capture of emergent interactions into genetic-epigenetic circuits, which are passed to and elaborated on in subsequent generations.”

*(Pigliucci and Müller 2010, p. 14).*
West-Eberhard:  
*Developmental plasticity and evolution*

“genes are followers not leaders, in evolution... evolutionary novelties result from the reorganization of preexisting phenotypes and the incorporation of environmental elements... phenotypic plasticity can facilitate evolution by the immediate accommodation and exaggeration of change.”

(West-Eberhard, 2003, p. 20).
“even a form of “inheritance of acquired characteristics” does occur and might even be said to be ubiquitous. .. new variations induced by stress are sometimes inherited. ..epigenetic inheritance systems [affect] how we see adaptive evolution and speciation. It also has implications for human health.”

(Gissis & Jablonka, 2011, p. xiii)
Epigenetics
“The classic epigenetic alteration is that of DNA methylation, which involves the addition of a methyl group onto cytosines in the DNA...There are two critical features to DNA methylation: First, it is a stable chemical modification, and second, it is associated with the silencing of gene transcription.”

Michael Meaney (2010, p. 56-57)
Research provides “compelling data that epigenetic marking of the genome, particularly sustained changes in DNA methylation, is a molecular basis by which early-life experiences can have lifelong and even transgenerational effects on neurobiology and behavior.”

Tania Roth (2012, p. 593)
Epigenetics and Human Social Genomics
“... research in *human social genomics*... is [providing] increasing evidence that changes in the expression of literally hundreds of genes can occur as a function of the physical and social environments we inhabit. Moreover, it appears as though these effects are often more strongly tied to peoples’ subjective perceptions of their surrounding social environment (e.g., feeling lonely) than to “objective” features of those environments (e.g., being single).”

George Slavich & Steve Cole (2013, p. 331)
“... psychological interventions can reverse stress-induced genomewide transcriptional responses..., which may in turn have implications for human health... This research also hints at the possibility that certain positive states of mind may be associated with differences in gene expression, which may in turn shape a person’s risk for a variety of psychiatric and physical disorders. Such states may include optimism, tranquility, affection, gratitude, admiration, mindfulness, social connectedness, and compassion.”

Slavich & Cole (2013, p. 342)
Genetic Reductionist Models are Egregiously Flawed, Counterfactual Conceptions of the Role of Genes in Human Development

- There are no genes for plasticity.
- Genes are part of the holistic, dynamic, relational developmental system.
- There are no gene $\rightarrow$ context relations.
- There are gene $\leftrightarrow$ context relations or, more generally, individual $\leftrightarrow$ context relations.
- In such relations the specific attributes of the individual and the context are of fundamental importance.
The overarching theory within which the specificity principle is embedded emphasizes the individuality of individual context relations. Five constructs moderate these relations and shape the quality and direction of the developmental process.

These constructs are: Specific setting conditions, specific individuals, specific times, specific processes, and specific domains (content areas) of these processes.

In other words, the specificity principle in developmental science asserts that specific setting conditions of specific people at specific times moderate specific domains of development through specific processes of individual context coaction.
A Prototypic Use of the Bornstein Specificity Principle to Frame a Multi-Part Question for Developmental Research

- What *specific* actions,
- Of what *specific* individuals,
- In what *specific* places (contexts),
- Of what *specific* durations,
- In what *specific* communities, societies, and cultures,
- At what *specific* times in ontogeny,
- And at what *specific* times in history
- Will result in what *specific* features of development?

**IMPLICATIONS:** To study development, researchers must focus on *changes within specific people, and not on relations among variables across people!*
We Are In The Midst Of A Paradigm Shift: From Reductionism To Relationism

- We need to understand the process through which individuals develop mutually influential and, for positive/healthy development, *mutually beneficial* relations between themselves and their culturally diverse world:

**Individual ↔ Context Relations**
**Must Be Studied and Evaluated through Assessing Within-Person Change**
The ergodic theorems hold that in order to compute statistics such as means or standard deviations data sets must be marked by: 1. Homogeneity across individuals; and 2. Stationarity of individuals’ scores on variables across time.

However, variation exists across people within time and within people across time. In other words, people differ in their paths across the life span.

As such, the assumptions of the ergodic theorems – that average scores for a group can be used to understand individual attributes of members of a group – are rejected.

Human development is non-ergodic and, as a consequence, emphasis should be placed on idiographic, person-centered research and not averages across people.
THE END OF AVERAGE
HOW WE SUCCEED in a World That Values Sameness

TODD ROSE
Three Concepts that Go Beyond an Exclusive Focus on Average

1. **Jaggedness:** At any point in time each person has his or her specific and unique constellation of attributes (e.g., moral, civic, social, leadership, and performance).

2. **Context:** The attributes manifested by an individual at any point in time are moderated by the specific context of development.

3. **Pathways:** We all walk the road less traveled (every individual will have his/her own specific history of development across time and place).
Confronting Complexity

- Can developmental science actually study and make sense of idiographic, within-person change?

- YES!
Molenaar and Nesselroade: Individual processes can be modeled as latent processes that maintain a consistent dynamic structure from individual to individual while idiosyncratic change exists for each person.

Developed by Peter Molenaar (1985), dynamic factor analysis (DFA) addresses the idea that the state of the individual at any specific point in time is a function of both concurrent influences and past states.

Events that influence an individual at one point in time contribute to both concurrent behavior and, as well, may carry forward to influence later behavior.

DFA models such processes by relaxing the assumption that all observations of a person are independent observations. Occasion-to-occasion dependencies (as in time series with equally-spaced observations) are explicitly modeled, thus allowing for carryover, spillover, or system memory effects from one occasion to the next.
The Idiographic Filter

- The idiographic filter (IF) involves identifying invariant (across individuals) nomothetic relations at the latent level while explicitly recognizing idiosyncratic features of the manifest indicators of the latent constructs.

- A key feature of the IF is that relations (factor loadings) between manifest (observable) variables and latent (unobservable) variables or factors are not necessarily invariant from individual to individual.

- Thus, the idiographic filter consists of the first order factors and their loadings on the manifest variables. These factor loadings can reflect considerable idiosyncrasy in the relations between the latent and manifest variables.
Dynamic Factor Analysis and the Idiographic Filter

- The integration of the dynamic factor model (DFM) and the IF provides one promising way to ascertain what individuals have in common first and then building generalizations on that information.

- This approach stands in marked contrast to initially aggregating the individual level information and extracting generality from it in the form of average tendencies—the approach of traditional differential psychology.

- The integration of the DFM and the IF replaces static trait conceptions with an approach that embraces development and complexity.
Molenaar and Nesselroade present quantitative methods for an idiographic approach to human development.

There are, as well, important qualitative approaches for depicting idiographic pathways:
- Ethnographic and narrative analyses
- Artistic approaches (literature and film)
- Media innovations

Mixed-method designs
AN EMPIRICAL EXAMPLE: PLASTICITY, SPECIFICITY, NON-ERGODICITY, AND POSITIVE YOUTH DEVELOPMENT AMONG MAJORITY-WORLD YOUTH
The Compassion International (CI) Study of Positive Youth Development (PYD)

Developing Responsible and Fulfilled Youth: A Multi-National Longitudinal Study of the CI Model of Promoting PYD among Youth Living in Poverty

Funded by Compassion International and King Philanthropies
Youth Poverty in the Global South

- Across the world there are more than one billion children living in poverty, with about 400 million children living in extreme poverty.

- The World Bank describes poverty as a “pronounced deprivation in well-being.” Such marginalization from the resources needed for health and well-being may diminish chances of youth to grow into healthy, fulfilled, and responsible adults.

- As Sim and Peters (2014) note: “Children are the most vulnerable and marginalized group of people as a result of poverty, yet they represent the hope and the future for their families, communities and countries.

- The effects of poverty may create feelings of hopelessness, alienation, and may even foster radicalization among youth, thus preventing thriving and threatening civil society. This waste of human capital may have pronounced and burgeoning dire effects on geopolitics, the world's economic system, and global peace.
THE RESEARCH REALITY

- According to USAID (2017), there is no theoretical underpinning or understanding of the bases of PYD in international programs aimed at promoting PYD;

- Lack of robust and consistent measurement of PYD outcomes;

- Few instances of longitudinal studies or evaluations of PYD programs.
THE NEED

In 2017, USAID stated that there is:

“a tremendous need to invest in advancing the field, piloting new strategies, and rigorously evaluating and documenting programs that are being implemented.”
Progress to date in the CI Study of PYD

- Studying children aged 9-15 years for 6 years allows collection of data from Ages 9 to 21
- Using a propensity-score matched comparison sample allows assessment of the impact of CI programs.

- Two waves quantitative data collected
- One wave qualitative interviews conducted
- First-wave quantitative data collected
Initial Findings

- Refined measures to enhance assessment quality among youth in El Salvador.
  - Measured PYD (Five variables)
  - Measured Contribution (One variable)
  - Measured Spirituality (Two variables)
  - Measured Perception of Safety (One Variable)

- Established measurement invariance across age, gender, and CI-enrollment status.

- In comparison to non-CI-supported youth, CI-supported youth reported:
  - Higher levels of Fidelity (Spirituality);
  - Higher levels of Character (PYD)
We need to peer into the “Black Box” of Programs and assess if specific exemplary programs promote the same features of PYD among the specific children in the program.

We operationalized “exemplary programs” as ones rated by practitioners to be delivered in safe spaces that manifested what has been termed the “Big 3” features of effective youth-development programs:

1. Positive and sustained adult-youth relations between a young person and an adult (such as a mentor, coach, or teacher) who is competent, caring, and continually available for at least one year;

2. Life-skill building activities (e.g., enhancing skills pertinent to the selection, optimization, and compensation of skills); and

3. Opportunities for youth participation in and leadership of valued activities in the specific contexts (e.g., family, school, or community).
Using the Big 3 Criteria, We Identified 20 Exemplary Programs

- Did all the program sites contribute equally to the variable-centered results comparing Salvadorian CI and non-CI youth?

No!

- For 3 sites, scores for CI youth were lower than scores for non-CI youth on some of the 9 variables;

- For 2 sites, there were no differences in the scores of CI- and non-CI youth;

- For 7 sites, scores for CI youth were higher than scores for non-CI youth on some of the 9 variables.

- For 8 sites, the differences between CI- and non-CI youth were mixed: in some cases CI youth scored higher than non-CI youth AND in some cases CI youth had lower scores than non-CI youth.
In establishing the “Big Three” measure across CI programs and other youth programs in Rwanda, CI-supported youth reported:

- Significantly higher levels of each of the Big Three features of effective youth development programs (mentorship, skills, and leadership).
- Significantly higher levels of youth contributions and perceptions of program safety.
  - Youth contributions appear to be related to perceptions of safety at the programs.
There is increasing evidence that CI’s programs are promoting PYD through its programs in El Salvador and Rwanda.

Built on the Big 3, the questions we should ask in designing effective YD programs are:

- *What* changes do we wish to promote?
- Through *what* programs?
- In order to produce *what* outcomes?
- For *what* groups of youth?
- Of *what* age(s)?
- Living in *what* settings?
CURRENT IMPLICATIONS OF THE CI STUDY OF PYD

- To enhance the development of poor children in the majority world, the specificity of the child and of his or her context must be of primary focus.

- Specific variables are involved in the positive development of specific children developing in the context of specific programs.

- Although there are important general features of contexts that must be present to promote PYD (safety and the Big 3), the instantiations of these contextual variables must occur in ways that capitalize on the specificity of individuals and settings.
DEVELOPMENTAL SCIENCE CONTRIBUTIONS TO SOCIAL JUSTICE
Social justice focuses on the rights of all groups in a society to have fair access to and a voice in policies governing the distribution of resources essential to their physical and psychological well-being.

Social justice focuses also on social inequities, characterized as avoidable and unjust social structures and policies that limit access to resources based solely on group or individual characteristics such as race/ethnicity, age, gender, sexual orientation, physical or developmental ability status, and/or immigration status, among others.

Social Justice as the Social Lens for Applying Developmental Science
(Fisher & Lerner, 2013)
Theoretically predicated changes in the developmental system need to be evaluated in regard to whether positive development can be equally promoted among specific individuals whose specific ecological characteristics (e.g., socioeconomic circumstances) lower the probability of such development.

Scholarship aimed at promoting social justice identifies the means to change the individual ⇔ context relation in order to enhance the probability that all individuals, no matter their specific individual characteristics or specific contextual circumstances, move toward an equivalent chance to experience positive development.
CONCLUSIONS:
Developmental Science in the Post-T.R.U.M.P. Era

- The theoretical orientations and interests of contemporary developmental scientists, the requirements imposed by funders for producing scholarship that matters in the real world, and the needs for evidence-based means to address the challenges of the 21st century have coalesced to make Kurt Lewin’s (1952, p. 169) quote, that “There is nothing so practical as a good theory,” an oft-proven empirical reality.

- The scientific and societal value on which the developmental science in the post-T.R.U.M.P era will be judged will be whether its theoretical and methodological tools are productive at promoting positive human development across the life span for the diverse people of the world.
Therefore, as we move forward to ameliorate the SINS besetting global youth, promoting social justice for the diverse youth of our world is, and will be, the most significant lens through which the contributions of developmental science will be viewed.
1963
"So, let us not be blind to our differences, but let us also direct attention to our common interests and the means by which those differences can be resolved. And if we cannot end now our differences, at least we can help make the world safe for diversity. For in the final analysis, our most basic common link is that we all inhabit this small planet. We all breathe the same air. We all cherish our children's futures. And we are all mortal.”

President John F. Kennedy, June 10th, 1963
THANK YOU!