



Research article

Positive psychology as a strategy for promoting sustainable population policies



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ABSTRACT

Demographic stability constitutes a paramount global environmental objective. Yet, decades of efforts, highlighting the perils of overpopulation, have failed to slow the rapid global population growth. In considering an alternative strategy, insights from the field of positive psychology are explored for their potential to inform future demographic policies. After briefly reviewing sustainable advocacy efforts, different theories behind individual fertility decisions are presented. Following, key components of prominent successful family planning interventions are analysed using a 'positive psychology' perspective. Three 'positive psychology' strategies are explored for their potential to inform sustainable population: a "direct" approach that emphasizes individual benefits rather than indirect gains through mitigation of damages; an emphasis on the convergence between the collective and individual benefits of two-child families; and application of behavioral change theories in demographic policies to better facilitate sustainable individual fertility decisions. The paper posits that a positive psychology conceptualization offers a promising way to re-think the design of demographic policies and frame sustainable population interventions.

1. Introduction: towards a sustainable and stable future

Ecology teaches that *stability*, or having sufficient resilience to maintain a population equilibrium, constitutes a critical component of any sustainability strategy (Ludwig et al., 1997; Bai et al., 2004; Tilman et al., 2006; Sachs, 2015). As the world seeks to meet the United Nations' Sustainable Development Goals, it is increasingly clear that population density and size drive the quality and quantity of life - globally and locally. Attaining demographic stability over the long run constitutes an essential public policy objective. Societies where birthrates have fallen far *below* replacement levels can face economic and social consequences which may ultimately undermine government solvency and the social contract (Haub, 2010; Boldrin et al., 2015; Wood, 2016; Kishida and Nishiura, 2018; Allen, 2018). At the same time, countries with rapidly *growing* populations frequently are unable to provide basic infrastructures for health (Husseni and Ullah, 2019; Niogu, 2018), transportation (Cho and Kim, 1983; DeRobertis and Lee, 2017), housing (Cho and Kim, 1983; Chazovachii, 2011; Weinberg, 2016), and an effective legal system (Vickrey et al., 2009; Burrell, 2018). At the same time ecosystem services are often degraded due to population pressures (Wackernagel et al., 2002; Rockstrom et al., 2009; Ehrlich and Ehrlich,

2013; IPBES, 2019). Empirical evidence confirms that attempts to end poverty, eliminate hunger, provide quality education, supply clean water and sanitation or even ensure gender equality become futile when birthrates are too high (Ehrlich et al., 1995). Collective interventions to address social and environmental problems come to resemble a runner on an ever-accelerating treadmill, who needs to sprint harder and harder merely to stay in place (Tal, 2016).

Demographic policies have proven their ability to change such untenable trends by reducing (Wong and Yeoh, 2003; Cohen et al., 2013; Déterm, 2019) or alternatively increasing (Kalwij, 2010; United Nations Population Division, 2015) birth rates in response to unsustainable fertility levels. Government interventions can shift the economic calculus for having children (Heil et al., 2012), as well as influence the anthropological norms and individual perceptions which determine family size (Ding and Hesketh, 2006; Hesketh et al., 2005). Designing demographic policies which are culturally sensitive, respectful of human rights, equitable and effective constitutes a paramount challenge for today's political leadership.

This article considers new approaches to raising the topic of overpopulation and engaging the public in this ecological imperative using a 'positive sustainability' perspective. Positive sustainability emerges from

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positive psychology and embraces its conceptual thinking as part of sustainability sciences (Bukchin and Kerret, 2018; Corral-Verdugo, 2012; Kerret et al., 2014, 2016; Macharis and Kerret, 2019; Venhoeven et al., 2013). After a brief review of the checkered outcomes of historical efforts to advocate for sustainable population policies worldwide, the article explores the literature regarding individual considerations for choosing the number of children. We then turn to our central argument, outlining the role a positive sustainability approach should play in the design and implementation of effective demographic policies. Three main sub-chapters are devoted to reviewing central concepts from the emerging field of positive psychology, exploring the potential for enriching the strategies used for promoting demographic policy. They include:

- Using a *direct* (as opposed to *indirect*) approach to promote policy goals;
- Highlighting the convergence between replacement fertility and subjective well-being; and
- Application of positive psychology principles to sustainable population policies.

These concepts are not only informed by the positive psychology literature, but also rely on empirical research and observations of successful family planning programs in a range of countries.

The key contribution of positive psychology to social sciences involves its emphasis on changing the underlying orientation from *mitigating problems* to directly promoting *desired societal outcomes* (Pawelski, 2016a). Positive psychology differs from other sub-disciplines of psychology in its direct focus on promoting what is good in life, as opposed to preventing and mitigating negative phenomena (Pawelski, 2016a). Translating this line of thinking into demographic policy suggests reframing policies that are aimed solely at *reducing* the negative phenomenon of 'overpopulation' and 'rapid growth' with one that promotes sustainable 'replacement fertility rates' and empowering women. Such reframing produces different policies and outcomes. While the first contribution of positive psychology relates to embracing a positive point of view, the second contribution, when applied to demography, involves the convergence of desired outcomes in both fields. Beyond the advantages of stability or replacement fertility levels on the biospheric and societal spheres, there are many reasons why sustainable fertility levels have a positive impact on individual wellbeing. Understanding the reasons for this convergence offers policymakers the opportunity to better create policies and mobilize public opinion, influencing individual desire to attain demographic stability.

The third and last component evaluated in this article builds on the two first parts. It acknowledges that similar to many other environmental challenges (Baum and Gross, 2017), the ultimate ability to achieve desired collective outcomes is contingent upon individual decisions. Hence, in order to succeed in attaining replacement fertility rates, a holistic approach is required to catalyse desired behavioral changes (Bandura, 2011; Baum and Gross, 2017). Taking into account people's primary reasons for having children, the article's final section suggests policy responses based on the practical strategies consistent with the insights of positive psychology, that take into account common, human motivations to procreate.

Relying on these theoretical underpinnings, a new strategy for engaging the public on the issue of overpopulation emerges. The paper concludes by summarizing suggested positive demographic policy approaches for promoting replacement fertility rates and advancing a vision of two-child families. Clearly, campaigns that are effective in Western countries are different than those which might be launched throughout Sub-Saharan Africa. But human nature tends to be universal. We argue that fundamental insights about the way this complex, sensitive and ever-evolving problem should be framed by sustainability advocates are similar, regardless of the society being targeted. While this holistic and innovative approach is not designed to serve as a blanket replacement of

existing policies and thinking, it offers the potential for producing better outcomes.

2. The impacts of overpopulation and the reasons for the limited effectiveness of international responses

Fifty years of efforts to stabilize demographic levels globally have produced only modest progress. Present trends suggest that without significant and improved efforts, population-related problems facing the planet are going to get much worse. In the summer of 2019, the United Nations released its most recent projections of future population growth. This analysis reported that the world's population numbers roughly 7.77 billion - one billion more inhabitants on the planet than there had been twelve years earlier (U.N., 2019). It took an estimated 200,000 years for the world's population to reach one billion. In the context of the historic, human footprint on planet earth, a twelve-year one-billion-person increase is extraordinary, posing an enormous additional burden on the earth's carrying capacity (Rees, 2018).

The United Nations, ostensibly, is committed to preserving the people of the planet and its ecosystem services. But demography remains a charged, political issue, making United Nations officials, like most demographic experts, a cautious lot (Preston, 1993; Tabutin, 2007). Perhaps that's why the UN report chooses to frame the new findings as an improvement: "Ten years ago, the global population was growing by 1.24 per cent per year. Today, it is growing by 1.10 per cent per year..." (UN, 2019, 13–14). This means that it will take one year more, or thirteen years, for the world to add an additional billion people to its ranks by 2030. Using the "medium variant", the United Nations estimates that by the end of the century, the planet will be home to 11.2 billion people. Such high numbers bode poorly for the quality of life and environmental reality of future generations, especially in the least developed countries whose populations are expected to continue to grow.

Already, population expansion constitutes a key driver for a range of negative social and environmental impacts. The percentage of hungry people in the world has surely declined in recent years, but then there are a lot more people living on the planet. The most recent estimates by the United Nations Food and Agricultural Organization (FAO) estimate that roughly 815 million people suffer from chronic undernourishment (Food and Agricultural Organization, 2017), down only moderately from 917 million in 2000 (Food and Agricultural Organization, 2000). Some 150 million children (22% of those alive today) are considered stunted (UNICEF, World Health Organization, the World Bank, 2018). Some 3.1 million deaths each year - 45% of all child mortality - are attributed to malnutrition (UNICEF, 2018). Africa, the continent with the highest demographic growth rates, faces the most acute food insecurity and suffers the most pernicious incidence of starvation. It is the only place in the planet where rural populations continue to grow (Behrman, 2017). By the end of the century, it will have to feed three billion more people - some four times present requirements (van Ittersum et al., 2016).

Humans are not the only species on whom the burgeoning numbers take a toll. The World Wildlife Fund's ongoing *Living Planet* Report reports a 2% annual decline in the average population size of vertebrate species; this means that some sixty percent of the earth's creatures living in the wild disappeared during the past 45 years. In 2019, the United Nations issued an unprecedented warning that one million species were on the brink of extinction (IPBES, 2019). Loss and degradation of habitat due to ever expanding human encroachment is the primary cause of habitat loss and the natural world's steady collapse (Carr, 2004; Baillie et al., 2010; Böhm et al., 2013; WWF, 2018; International Union for Conservation of Nature, 2018).

Several comparative analyses also confirm that population increase is the single greatest driver of greenhouse gas emissions (Dietz and Rosa, 1997; O'Neill et al., 2012; Spears, 2015; Scovronick et al., 2017; Weber and Sciubba, 2018). For instance, a recent publication by Lund University researchers Seth Wynes and Kimberly Nichols, assessed 39 peer reviewed papers, carbon calculators and government reports to identify the most

effective alternatives for reducing individual carbon footprint. Having one less child was deemed 24 times more effective than any other single activity (Wynes and Nichols, 2017).

Overpopulation not only affects quantity of life, it also affects quality of life. The causal link between crowded living conditions, and aggressive or violent behaviour, has been established for some time (Sundstrom, 1978; McCarthy and Saegert, 1978). The association seems to be universal. For instance, a 2016 study in Nigeria concluded that overcrowding was by far the most dominant variable affecting four of five scales measuring aggressive and antisocial behaviors (Makinde et al., 2016). Research in India documented increasingly competitive behavior under conditions of high density and scarce resources where people reported a subjective sense of crowding (Jain, 1987).

There is plenty of physiological support for the presumption that high density conditions produce discomfort among humans: When faced with crowded conditions, people exhibit physical manifestations of stress, including elevated blood pressure, stress hormones and changes in skin conductance (Evans, 2001). When deprived of personal space, humans also show myriad external signs of tension, anxiety and nonverbal indicators of nervousness, like fidgeting or playing with objects repetitively (Evans and Cohen, 1987). The longer crowded situations persist, the greater the stress exhibited (Evans and Werner, 2006).

These dynamics are hardly new. In 1968 Stanford biologist Paul Ehrlich published *The Population Bomb* which quickly sold 2 million copies and made “overpopulation” a central issue on the global environmental agenda (Ehrlich, 1968). While several of the book's dire predictions have not yet been confirmed, the general picture described of food shortages and acute environmental damage is generally precise. Four years later, a computer simulation run out of MIT evaluating the effect of exponential population growth on the world's finite natural resources was prepared for the “Club of Rome”. It was soon published as a popular book, *Limits to Growth* (Meadows et al., 1972) and has since sold 30 million copies. The report envisions a global collapse caused by resource shortages occurring around the year 2072. While other population/environment theories challenged the neo-Malthusian perspective as simplistic (Hummel et al., 2013), the ominous pictures of the immediate and long-term effects of high population density on civilization and the world's ecosystems remains the predominant paradigm (Lader, 1971; Johnson, 1973; Hardin, 1995; McGibben, 1998) with public interest organization calling for government interventions from contraception distribution to immigration restrictions (Kammer, 2016).

Regardless of any imperfections in the early projections of global overshoot, salient for the present discussion is the recognition that in retrospect, the alarmism which characterized demographic advocacy during the twentieth century, simply did not “sell” very well. Not only did the general public become less concerned about demographic growth, even the environmental movement, that once embraced the issue as the planet's central challenge, equivocated or simply grew complacent.

The reasons for this phenomenon are thoughtfully documented by political scientist, Diane Coole (2013) in her essay: *Too many bodies? The return and disavowal of the population question*. Coole points to five different phenomena which contributed to the general dismissal of this urgent environmental issue during the 1980s and '90s:

- *population-shaming* (a smear campaign that equated population advocacy with racism);
- *population-skepticism* (a school that held that high population density was actually a positive phenomenon);
- *population-declinism* (a position that argued that population growth was declining naturally anyway);
- *population-decomposing* (a tendency to break the negative symptoms caused by population pressures into their component parts, rather than addressing their source) and
- *population-fatalism* (a paralysis born of despair that there was nothing to be done, about overpopulation which constituted a “wicked”, unsolvable, overwhelming policy problem).

The first three phenomena are fundamentally different than the last two as they involve substantive disagreements over facts and values, as well as occasionally disingenuous attempts to deny the existence of any consequences associated with population overshoot. The second two phenomena, however, require consideration from social scientists and activists who recognize the significance of designing a global strategy to address overpopulation and the need to increase the consensus among the general public in support of such policies.

Such a strategy may benefit from insights in recent studies regarding the effectiveness of hope-based educational strategies for changing environmental behavior (Verdugo, 2012; Kerret et al., 2014; Ojala, 2012). But how can something as seemingly grim as global collapse caused by unmitigated demographic growth be spun in a positive light? Before attempting to answer this challenging question, it is important to understand the reasons people choose to have the number of children they do.

3. Deconstructing the decision to have children

The decision regarding the number of children one has is ultimately a personal choice. Therefore, understanding the components of such decisions is an important first step in building a demographic strategy. Traditionally, academic demographers have been divided on the reasons why people elect to have children. Accordingly, two opposing schools with competing assumptions have emerged about the actual drivers of individual fertility decisions (Elster, 1989; Archer and Titter, 2000): On the one hand, the so-called *Homo Economicus* school holds that personal decisions, such as determining family size, are driven primarily by economic considerations (Becker, 1991; Ng and Tseng, 2008). People conduct an implicit “cost-benefit” assessment when deciding how many children they want. For example, natural resource shortages, as measured in time collecting firewood, increases the demand for children, given the value of household labor (Otto and Axinn, 2017). Alternatively, taxes and subsidies can affect fertility decisions (Whittington, 1992; Manski and Mayshar, 2003; Milligan, 2005).

The opposing position, or the *Homo Sociologicus* paradigm (Dahrendorf, 1973), argues that family planning decisions are primarily influenced by social, cultural and religious norms and of course individual psychological needs and values (Chabe-Ferret, 2016; De LaCroix and Perin, 2018). People have a given number of children because they feel they are expected to do so, or because they believe that it will give them psychological satisfaction, prestige, a sense of holiness or happiness (Bongaarts and Watkins, 1996; Bagheri and Saadati, 2018). There is sufficient empirical evidence to suggest that neither side is entirely right or totally wrong. Some people are clearly more dispassionate and economical in their calculations than others when planning their families. Most individuals are informed by *both* the social/cultural norms surrounding them as well as their economic reality (Hernes, 1972; Tal, 2016).

For instance, numerous theories have emerged about the psychological mechanisms that drive fertility decisions and motivation. If these are the dominant forces in an individual's psyche driving decisions, presumably she may not be affected by economic policies when they are not accompanied by interventions which seek to change these perspectives and frames of reference.

For example, the theory of planned behavior focuses on fertility intentions as the proximate determinant of reproductive behavior (Miller, 1994; Dommermuth et al., 2011). Presumably, people have both positive and negative feelings about the consequences of giving birth to an additional child. But they also are subject to the powerful influence of the societal norms in which they live. The decision to have children is driven by the diffusion of social pressures or an “encirclement-by-pregnancies” (Bernardi, 2003) in parallel with the advancing of women's proverbial “biological clock” (Myrskylä and Goldstein, 2013). Of particular importance is the perspective of their partners, which strongly affect the *intention* to have more - or not have more - children. Empirically, this

intention, or having high (or low) motivation to have a child is a better predictor of fertility, even than the “use” or “non-use” of contraception per se (McAllister et al., 2016).

A recent study among parents in Austria, France and Bulgaria confirmed that those who perceive agreement with their partner about wanting a child, are far more likely to have one than individuals who perceive an agreement of not wanting one (Freitas, 2017). The findings show that intention to have a child is still the single best predictor of birth outcomes. But partners' combined fertility desires and perception of agreement on fertility decisions are important contributing factors.

Another theory used to explain why people have children is called “Life History Theory” (McAllister et al., 2016). The notion is that given limited resources and time, individuals make tradeoffs about their present needs along with current and future reproduction, based on the way they perceive their personal circumstances and their environmental conditions. For example, in cases where life expectancy is low, a “fast life history” strategy is often preferred, characterized by high fertility and lower investment in offspring (Chisholm, 1993).

A similar conclusion emerges from another proposed psychological mechanism behind fertility motivation: the so-called *transmission competition hypothesis*. It argues that a “legacy drive” exists in humans, who wish to leave a part of themselves for the future. Decisions to have large families presumably are informed by this impulse (Aarsen and Altman, 2012). Queens University biologist, Loonie Aarsen argues that the pursuit of careers and life goals, especially among women, has largely come to provide the “enduring personal legacy”, replacing the traditional biological expression of this desire. According to this theory, policies that expand women's professional and cultural horizons, allowing them the opportunity to create lasting achievements and enjoy a sense of meaning and self-actualization in their work and activities can reduce the psychological need to birth numerous offspring. In Aarsen and Altman's survey of over a thousand university students, they found a significant negative relationship among females, regarding the “level of interest in life course goals associated with a rewarding career, acquiring fame, and making contribution to ideas and discoveries, but a significant positive relationship with the goal of inspiring others with one's religious beliefs.” (Aarsen and Altman, 2012, 37). Similar findings are found across numerous cultures and economic realities. For instance, working women in Nepal are 1.6 times more likely to use contraception than a parallel cohort that were not working (Shresta, 2016).

A similar paradigm for understanding fertility motivations is espoused by *Terror Management Theory*. According to this perspective, humans have an easier time accepting their own mortality more graciously when they come to believe that they can “live on through their children”. As parents see themselves manifested physically or in their children's disposition, lingering anxiety about their inevitable disappearance can give way to a sense of relief and self-esteem, joy at the cultural and genetic continuity (Solomon, 2019).

To the extent a “legacy” impulse is manifested, the focus involves perceived *direct* utility, rather than indirect, distant collective benefits. The enormous sacrifice associated with parenting that humans exhibit typically is not directed at attaining amorphous environmental gains. For instance, recent study suggests that after having children, parents are actually *less* inclined to engage in environmentally friendly behavior. This suggests that perceived immediate needs and the wellbeing of children are prioritized over the more distant and collective benefits of environmental progress (Thomas et al., 2018).

It can be argued that it makes little sense to base a strategy for family planning in sub-Saharan Africa on the views of Canadian university students. Indeed, in Africa, some 50% of females are already mothers by the age of 18 (Capurchande et al., 2016). Nonetheless, numerous empirical studies in Africa also consistently confirm that education is associated with low fertility and that girls who receive secondary education opt to have smaller families (Cochrane, 1979; Shapiro, 2012; Gebreselassie and Shapiro, 2016; Towriss and Timæus, 2018). For most

women, expanded professional horizons and meaningful options to motherhood appear to be universally compelling alternatives to large families.

Of course, the world is complex and many countries have idiosyncratic histories, experiences and values which drive individual reproductive decisions. Israel, for instance, has the highest total fertility rates in the OECD. The 3.1 average number of children had by families there has been identified as a function of several cultural factor. These include: post-Holocaust trauma and the desire to replace 6 million Jews killed during World War II; contribution to winning a persistent ethnic conflict; compliance with the first commandment in the Bible: ‘Be fruitful and multiply’; military “insurance”, or the somewhat macabre assumption that additional progeny may compensate for a child who might die in violent conflicts; a desire to improve the political power of an individual's sociological faction; or a cultural affinity for large families (Tal, 2016).

Notwithstanding the cultural context, as contraception becomes increasingly available, individual pregnancy decision are frequently a reflection of a belief that a new child will produce happiness for the mother, couple and family (Kingsley, 1977; Brodziak et al., 2013; Borreroa et al., 2015). Creating an expectation of increased happiness by choosing *not* to have an additional child, therefore, constitutes a central objective for any program designed to reduce fertility. We next will consider the constructed reasons people choose to have an additional child and offer a positive psychology perspective on policies aimed at promoting stabilize population.

4. Positive psychology and sustainable demography

What can be learned from positive psychology to enrich demographic policy? Positive psychology may be defined as the science of optimal functioning (Pawelski, 2016a,b; Rusk and Waters, 2013). It increasingly influences disparate fields of study (Rusk and Waters, 2013). Initial connections have already been established between sustainability sciences and positive psychology. One aspect of such interactions in extant literature focuses on criticizing GDP as the main policy indicator of societal progress, and the proposing of alternative indicators that better reflect desired societal goals, while incorporating both subjective well-being and environmental indicators (Diener and Suh, 1997; Fiorino, 2017; Knight and Rosa, 2011; Villamagna and Giesecke, 2014; Zidanšek, 2007; Zawojaska, 2011).

The second connection between positive psychology and sustainability emerges from the study of human behavior, focusing on how sustainable actions are congruent with behavior that leads to higher levels of subjective well-being (Verdugo, 2012; Venhoeven et al., 2013; Carter, 2011). As an extension of the links between ‘environmental’ and ‘happiness’, there is a growing focus on variables that promote both subjective well-being and environmentally friendly behavior (Bukchin and Kerret, 2018; Kerret et al., 2014, 2016; Macharis and Kerret, 2019; Ojala, 2011, 2013).

Schmidt (2018) argues that the new theoretical thinking of ‘positive ecology’ should extend the very limited methods for achieving sustainability. Positive ecology claims that ways of living that contribute to both ecological patterns and processes as well as to human survival and well-being should be promoted (Schmidt, 2018). Clayton (2012) calls to further develop the connections between environmental psychology and positive psychology.

The following sections are consistent with this orientation, highlighting the interface between sustainability sciences and positive psychology, while further developing the ‘positive sustainability’ approach and its applications.

Each of the three following sections focuses on a particular aspect of the positive psychology discipline which can contribute to current conceptual thinking about demographic policy. This theoretical assessment is validated by the empirical outcomes of different existing demographic policies and interventions.

4.1. Using A Direct Approach to promote policy goals

In a systematic analysis of the field, Pawelski defines *positive psychology* as promoting optimal human functioning. The ‘positive’ in the definition of ‘positive psychology’ relates to its focus on *directly* promoting the positive “(the presence of the preferred)” (Pawelski, 2016b) through “promotion - increasing the preferred” and “preservation - maintaining the preferred”. This contrasts with other strands of psychology that indirectly promote the positive by focusing on the “absence of the dispreferred” through “mitigation – decreasing the dispreferred”; and “prevention – avoiding the dispreferred”. In other words, positive psychology seeks to directly increase those aspects in an individual's life that makes them happy and well. Embracing the conceptual insight of differentiation between *direct* and *indirect* strategies has implications for both the theoretical and the practical aspects of sustainable demographic policy (See Table 1).

As mentioned, overpopulation contributes to damaged ecological and climatic systems, to inadequate infrastructure (excessive density in traffic, hospitals, classrooms) and to general psychological discomfort caused by crowding (see Table 1). A traditional advocacy approach seeks to ameliorate these problems as a means for solving some of the major crises facing humanity. Embracing the conceptual thinking of positive psychology, however, requires a reframing of policy goals: rather than indirectly promoting the good (by mitigating problems or even preventing them) it directly promotes the good (by facilitating people's desired goals or preserving preferred situations).

As an initial step, instead of referring to mitigation of overpopulation and excessive demographic growth which indirectly harms human wellbeing, a direct approach simply focuses on promotion of desired fertility rates. Policies should encourage individual replacement fertility levels by emphasizing the resulting benefits which they and their families accrue. Two-child families of course happen to be consistent with the general desire to promote the ‘good’ for our planet (See Table 1). But family planning is to be preferred due to the intrinsic benefits it offers.

At first glance, this shift in emphasis might appear to be a trivial nuance. In fact, reframing the goal has major relevance for public policies and their implementation. Interventions to stabilize rapid demographic growth traditionally stressed the instrumental value: the need to reduce the number of people being born in order to achieve a more distant objective, and improve collective utility. But, this implies a willingness to sacrifice perceived individual or familial benefits for more amorphous environmental gains, something that typically runs counter to human nature. The existence of negative ramifications (such as loss of biodiversity, poverty perpetuation, etc), however, does not mean that other worthy positive goals should not be simultaneously pursued. It does mean that *demographic policies* which require mass engagement need to emphasize how smaller families will make life better at the individual level. Framed differently, replacement fertility rates should be presented as opportunities for having quality children, healthy family relationship,

greater prosperity, empowered lives for women and general familial well-beings (See Table 1).

Many countries have acted to change fertility patterns. In the past, some opted for “sticks” and “stigmas” rather than “carrots” and “accolades”. China's one-child program constitutes the most extreme example. The government depicted high birth rates as the cause of China's economic dereliction, and the key purveyor of famine, food shortages and collective misery (Zeng and Hesketh, 2016). Citizens who refused to comply with fertility limits were not only violators of the law; they were derided as selfish, nefarious and anti-social (Hesketh et al., 2005, 2015).

It is often argued, that by the time the one-child policy had been implemented, birth rates had already plummeted in China, responding to a national campaign and slogan: “Later, Longer and Fewer”. While the one-child intervention did not discontinue this line of marketing, replete with posters glorifying families of three, the new strategy was ultimately based on instilling guilt and fear of government enforcement. In many areas, the policy was singularly unsuccessful (Feng et al., 2016), and was almost universally resented by the population whose hearts and minds had not been engaged (Whyte et al., 2015). In any case, scaling up the Chinese strategy is not only impossible in democratic societies, but substantively undesirable as it hardly constitutes a model of efficacy (Wang et al., 2018; Myer et al., 2019).

The Chinese experience is in fact anomalous and most countries who have instituted policies to reduce fertility levels have chosen other paths. The most successful population policies do not characterize large families as a problem, demonizing parents who chose to have many children or stressing the catastrophic effects down the road of continued demographic growth. Rather, the focus is on the direct benefits and good fortunes of small families, highlighting the positive outcomes associated with sustainable fertility levels (Weisman, 2013).

Accordingly, a strategic exploration of population policy framing and the direct promotional strategy needs to begin with a most fundamental question: “What constitutes a good life?” and “How does stabilizing population increase the likelihood that people will enjoy the blessings and benefits that a good life provides?” The United Nations Sustainable Development goals may constitute the most comprehensive, official and quantifiable effort to provide universal indicators of what such a life should contain: from decent work and good education to gender equality and clean water. Thus, a sustainable demographic strategy informed by positive psychology would posit that instead of fixing society's problems, the policy aims to facilitate the wellbeing of citizens. Yes, widespread family planning will build the capacity of society, maximize the wellbeing of families and create a shared vision of a harmonious future for humanity with a stable population. But far more important for the “stakeholders” that need to be engaged, people will simply be happier, and life will be better with two-child families.

Singapore offers a conspicuous example of the power of positive campaign, with a direct pitch for a “good life”, to change cultural norms regarding family size. Declaring family planning a matter of “national importance”, in 1966 the Minister of Health framed the issue in terms of

Table 1. Competing approaches to presenting population challenges.

Approach\Sphere	Collective	Private\Individual
Direct (Benefits associated with stabilizing population\ two-child families)	Open spaces Access to nature Equal opportunity Adequate infrastructure	Women's education Women's career opportunities Healthy family relationships Familial well-being Enhanced educational opportunities More time for children Calm social environment
Indirect (Problems associated with overpopulation growth)	Involuntary crowding Biodiversity loss Exacerbated social gaps Excessive density (traffic, hospitals, classrooms)	Gender gaps perpetuated Women's career compromised Marital problems Deficient childhood education Insufficient time for children Aggressive behavior

“quality” rather than “quantity” (Saw, 2005, 25). Newspaper coverage at the time, by the government supervised media was effusive. Headlines like “Birth Control Success”, “Family Plan for Singapore – Way of Life” and “Family Planning Services in Great Demand” (The Straits Times, 1966) created a sense of societal solidarity and shared enthusiasm to achieve a common, societal goal that could easily be translated into individual actions that infused citizens with a sense of purpose.

Accordingly, in 1966 the Minister of Health launched a new “Stop at Two” policy initiative, explaining: “Our best chance for survival in an independent Singapore involves a stress on quality and not quantity” (Saw, 2005, 25). The government-run campaign emphasized the positive experience enjoyed by families with two children and the upside of replacement fertility levels. “Two is Enough” went the slogan and cheerful signs with happy children broadcast a simple message that “The more you have, The less they get” with adorable, but somehow vulnerable children, sending an implicit message that responsible and loving parents make sure that their children are well taken care of (Singapore Family Planning and Population Board, 1978). Ostensibly, the “stop at two” slogan-might be interpreted as presenting a negative spin on replacement fertility. However, closer consideration reveals it to be an operational recommendation to get to the “positive outcome” presented in the picture. In another poster from the campaign, the image involves an older and a much younger sisters, who seem delighted with the age gap between them. The slogan reads: “put some years between us” – and “girl or boy, two is enough” (Singapore Family Planning and Population Board, 1983).

The effect of Singapore's campaign is well documented. Figure 1 shows the precipitous drop in the country's fertility. The dramatic reduction in population growth rate contributed significantly to the sensational economic prosperity. By 2017, the country sported a per capita GDP of over 57,000 dollars representing a 400-fold increase since the advent of the country's population policies (World Bank, 2018). Indeed, today it can be argued that the campaign was excessively successful: present fertility is far below replacement levels with average total fertility rate at 1.24. The government of Singapore has responded now by encouraging greater family size among its citizens – again through positive messaging (Holtz, 2017).

For instance, the government has gone so far as to organize a “national night” for procreation every summer, encouraging citizens to “let their patriotism explode” (Nuwer, 2012). Significantly, the same tactical, positive orientation, that was so effective in encouraging family size reduction, is now being used to encourage expansion. In a newspaper editorial, Josephine Teo, Singapore's Senior Minister of State for Foreign Affairs and Transport who oversees the National Population and Talent Division, explained the government's approach: “One thing is clear: Millennial Singaporeans, who number nearly a million, are not about to start

families because someone exhorts them to. If and when they decide to, it will likely be because they regard marriage and parenthood to be achievable, enjoyable, and celebrated” (Teo, 2016).

African family planning programs and positive psychology

Most theories involving the psychological mechanisms of fertility, rely on data collected in *developed* countries. Because birth rates and normative family size are low, it is possible to focus on individual decision-making. As mentioned, circumstances in *developing* countries, especially sub-Saharan Africa, typically are very different. The social benefits from having a large family throughout the continent often remain powerful. In many agrarian contexts, economic benefits are also highly compelling. Individual desire to limit family size, especially among women, faces strong social and normative pressures which encourage high fertility. In such cases, changing the societal context and reinforcing individual motivation to stop fertility at replacement levels are especially critical for reducing high birth rates (Hayford and Agadjanian, 2012). Presumably, this can still be done more effectively by applying the sundry insights of positive psychology.

An expert from the United Nations Population Fund (UNFPA) has identified three critical components of successful family planning programs in Africa that are analogous to three components in an efficient office:

- 1) a cupboard - which contains all the contraceptive methods;
- 2) a trained provider-who can deliver the appropriate contraceptive services; and
- 3) a client who is motivated to utilize these services (Solo, 2008).

The first two components involve delivering a sufficient *supply* of family planning “infrastructure” to a country's people, tasks replete with logistical and geographically-specific challenges. By way of contrast, the third, and arguably most critical component, involves ensuring appropriate *demand* for family planning. The demand for contraception is hardly random and is a function of the quality of policies, promotional materials, training, supervision and advocacy. It is here where positive psychology can best offer a contribution. Indeed, a review of ostensibly successful family planning programs reveals framing in a positive light as a key element behind progress in many African countries.

In both Malawi and Rwanda, by implementing a strategy that essentially relied on positive orientation, by 2010 (after less than a decade of outreach) three-quarters of married women had already come to express a *desire* to utilize contraception (U.S. AID, 2012). Of course, this figure alone does not reflect actual utilization. Nonetheless, it constituted an important step in moving a society to the next stage of a demographic transition. Indeed, less than twenty years after systematic family planning interventions were initiated, actual contraception use

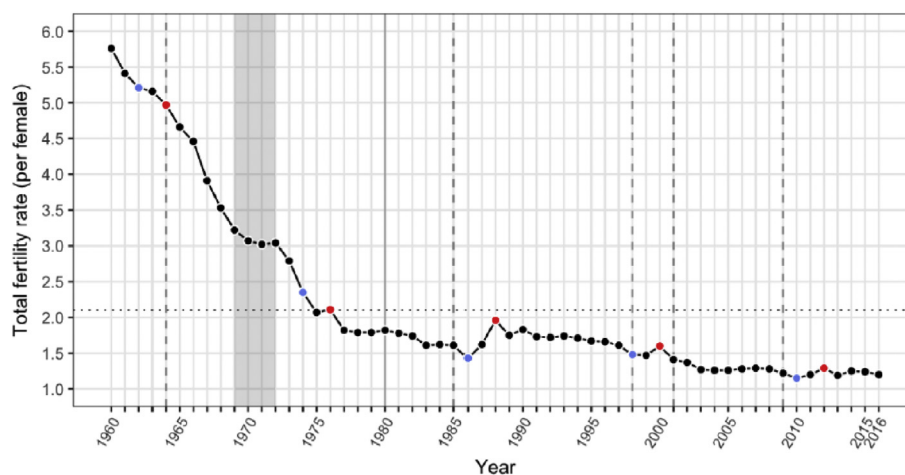


Figure 1. Singapore's total fertility rate, 1960–2016. Source: www.singstat.gov.sg.

among women in Malawi increased by 600% - going from 7% to 42% (Dasgupta et al., 2015). By 2017, a full 58% of married women reporting utilization of modern family planning methods (Behrman, 2017) levels not unlike those found in the United States (Kavanaugh and Jerman, 2018). In its evaluation of the significant increase in contraception demand, a U.S AID report highlights what it calls a new “culture of acceptance” It is well to ask: “What sort of message lay behind this transition?”

To begin with, family planning providers tried to make the economic case. The “demographic dividend” is a common slogan that refers to the benefit that occurs when countries with a large population of young people transition to replacement fertility levels (Poston and Bouvier, 2017). While national planners and macro-economists surely understand the advantages of demographic transitions, typically it is harder to have individual couples internalize the collective benefits to the local economy. Nonetheless, it appears possible, indeed essential, to emphasize the health and micro-economic advantages of lowered fertility at the individual, household level (U.S. AID, 2012). Making the case meant that health workers needed to convince families that they would also be more prosperous and healthier.

The case of Rwanda is of particular interest, given the 1994 genocide and subsequent internecine warfare which led to significant depopulation. This in turn gave rise to a cultural commitment among the country's rival ethnic communities to restore their numbers to previous levels. At the same time, even after this horribly violent episode, Rwanda remained the most crowded place in Africa (Diamond, 2011). The high population density may help explain why Rwanda's new government chose to make family planning a top national priority in its efforts to develop the country and reduce poverty. The benefits of population reduction were articulated at the highest level, with the Prime Minister himself weighing in and the Minister of Health participating in televised condom demonstrations while condemning religious leadership for inadequate promotion of family planning (Solo, 2008).

In 2012, Rwanda's Ministry of Health published its *Family Planning Strategic Plan, 2012–2016*. The plan addresses the issue of overpopulation as part of the national strategy to achieve the Millennium Development Goals. Translating aggregate progress into individual benefits and modified fertility preference, however, constituted a mighty policy challenge. In promoting the strategic plan, the country's Minister of Health, Dr. Agnes Binagwalro, declared contraception to be a “national priority for poverty reduction and socioeconomic development”. Specifically, family planning was presented to as a means to “eradicate their extreme poverty and hunger, lead to universal education, reduce child mortality and improve maternal health.”

Moreover, family planning was also described as a way to improve health, specifically, an important precaution for preventing HIV, as well as a contribution to combating of malaria and other diseases. The government's strategy document surely contains the additional benefit of “ensuring environmental sustainability”, but only mentions it as an afterthought at the end of the list of other, presumably more relevant Millennium Goals (Rwanda Ministry of Health, 2012), iii). Here, it would seem that there was a mix of negative and positive messaging, suggesting that a more concentrated identification of direct benefits may have led to even more effective results.

The key challenge in either case involves translating these diverse benefits into new fertility aspirations among the people. Researchers conclude that a “sensitizing campaign” by the Rwandan government, proclaiming three children to be the ideal family size, had a profound effect on public perceptions. The percentage of women who declared five-children families as an “ideal” dropped to 12.5% (Rutayisire et al., 2014). Critically, among never-married women, it dropped even further to 2.7% (Westoff, 2012).

At this point, the practical challenge becomes transforming “*wanted fertility*” into women's “*actual fertility*”. The trends are surely positive. By 2010, fertility levels in Rwanda were already comparable to the desired levels expressed by the public five years earlier. Contraceptive

prevalence among women quadrupled from 10 to 45%. Again, the strategic key to success appears to be linked to positive framing rather than simply increasing contraceptive availability. The struggle continues: in 2017 the government revised its early objectives for contraception usage by setting a target of 82% by the year 2020 (Family Planning, 2020, 2019).

One practical measure that seems to have helped make contraception utilization a more positive experience involves the “demedicalization” of family planning. The government not only expanded the number of professional agents who were authorized to promote contraception, but it also redefined an essentially *medical* service designed to “cure an illness” into one that addressed a *social* challenge. Accordingly, modestly trained health workers in Rwanda became authorized to insert IUDs, apply implants and “injectables” while promoting family planning as part of a broader efforts to encourage child spacing and reduce maternal morbidity and mortality (African Institute for Development Policy, 2012).

The Ethiopian experience, albeit less dramatic, appears to be similar. When the first survey of birth control utilization was conducted in Ethiopia in 1990, contraception prevalence was extremely low - only 2.3%. A decade later it was still only 6.3%. But by 2010, however, rates had reached 27% and by 2019, the figures have increased to 29% for all women with 40% of married women primarily utilizing pills and injectables (Family planning-2020, 2019). How was this progress achieved?

The quantum leap in contraception usage began as a top-down policy, with Prime Minister Meles Zenawithe citing it as a means for the country to overcome food shortages, prolonged drought and war in Eritrea. The strategic focus involved increasing both the quantity and quality of the family planning program through training, logistics, and management. Yet, the Millennium Development Goals provided a positive platform for encouraging smaller family size.

Tadele Kebede Lako, National Coordinator of Family Planning at Ethiopia's Ministry of Health describes the present emphasis on presenting women with the associated health benefits. “We focus on averting morbidity and child mortality. We also explain how smaller families empower women, especially economically. Most importantly, given the cultural leanings and resistance in some regions, we do not sell “limiting” childbirths, but rather the enormous benefits associated with spacing them at intervals of more than two years” (Tadele Kebede, personal interview, Addis Ababa, February 20, 2019). Evaluation studies suggest that much of the change in Ethiopia can be attributed to a new cadre of female Ministry of Health extension workers who distribute pills, condoms, injectables, even implants – but most of all *hope*.

In efforts to expand demand, individual health workers cannot be expected to reframe the call and engage a wider public in family planning programs on their own. Rather, the media needs to provide a critical boost in scaling up a positive, *sustainable population* message. Perceptions and societal norms regarding high fertility can be transformed through the dramatic presentation of compelling stories that implicitly – or even explicitly present advantages inherent to smaller families.

For over twenty years, the U.S. based NGO, the Population Media Center (PMC), has designed and supported radio and television series in developing countries which convey the blessings of replacement fertility. In developing countries this not only dramatizes the healthier relations between couples, but also highlights advantages for HIV prevention. The radio program *Umurage* in Rwanda is one such example, whose protagonists invariably had a better life by practicing family planning. The show remained popular enough to last three seasons on the commercial broadcasting network (Population Media Center, 2019). Evaluation research conducted suggests that with 1.1 million listeners tuning in on average for a particular show, over half (53%) of Rwandans had heard of the program, while a full 25% of the population listened to *Umurage*'s weekly message.

Government sponsored media programs can be no less effective. The Ethiopian Ministry of Finance and Economic Development reports that its media campaign, promoting the planning of families, has been important – even as exposure remains relatively low (only 22% of Ethiopian women listen to the radio). But it supplements broadcast media with community events such as programs at church and mosques, youth clubs, etc. that all urge family planning (U.S. AID, 2012).

The picture appears the same across Africa. A senior official at the Malawi Ministry of Health recently explained that in recent years the Government of Malawi had made concerted efforts to disseminate the benefits of modern family planning to all communities. Its primary emphasis is on the idea that “modern contraception can help mothers avoid pregnancies that may be too early, too frequent, too many, and too late.” As a local report explains: “In explaining this shift, a senior MOH official said that in recent years the Government of Malawi had made concerted efforts to disseminate the benefits of modern family planning to all communities” (U.S. AID, 2012, pp. 17.)

These real-world examples of relatively successful family planning policies directly promoting desired family size outcomes (or that indirectly further education of women, two-child families, ample and high-quality recreational time and contraception) support our hypothesis that the framing of sustainable population objectives matters. A positive sustainability orientation is not just about offering a “positive spin” in marketing, but influences both the substantive interventions as well as the specific policy tools used to achieve the goal of demographic stability (See examples in Table 2).

As will be elaborated in the next section, having a holistic and positive approach to addressing overpopulation means offering a more careful and comprehensive strategy of positive demographic policy. This in turn may lead to launching psychologically and culturally sensitive policy interventions. An important first step for designing these strategies, therefore, involves an in-depth understanding of the actual benefits derived by individual families when they “get with the program” and opt for replacement rate demographic rates. In the next section we will outline the literature that links the number of children in families with various aspects of well-being in the families. The review shows that taking current research into consideration, two-child families are highly beneficial at the individual level for all family members.

4.2. Two-child Families and Subjective Well-Being

As the happiness and successful functioning of individuals are interconnected with their environments, researchers have long called for extending the reach of positive psychology's insights into the policy sphere (Bandura, 2011). Hence, promoting a family size that is both optimal for the planet and for the individual well-being of its inhabitants is well within the agenda of positive-psychology-based public policy. The establishment of Sustainable Development Goals (SDGs) in 2015 (United

Nations, 2019) constitutes the most internationally accepted expression of the desired outcomes of sustainability policies. Each of these goals will be easier to attain with a stabilized human population on earth (Hardee et al., 2018). This means that hundreds of millions of families will need to make decisions which depart from present fertility norms in their communities. Like all collective action behaviors, the immediate outcome of an individual's action is often not self-evident and ultimately is contingent upon others acting the same way (John, 2018). This makes communication a critical challenge within the context of a policy intervention. Highlighting the immediate personal benefits derived from individual fertility decisions offers a promising strategy.

As the decision to have children is among the most personal choices the humans make, it is important to revisit the associated motivations. While myriad theories offer contrasting explanations for individual motives, none attribute significance to concern about aggregate societal good. Indeed, most fertility considerations remain essentially personal and focus on various aspects of individual and family well-being. At the same time, positive psychology seeks to understand the variables affecting the “optimal life” at the individual level (Pawelski, 2016a). The following review summarizes the literature that connects the number of children in a family with other aspects of individual well-being. The section also considers the interaction with some of the main drivers for having children and their influence on the number of children and well-being.

Current knowledge suggests that the collective, desired demographic goal of two-child families is fully compatible with individual well-being. When people believe that having large families will bring them joy, they are willing to endure myriad disadvantages: social, economic and emotional (Hansen, 2012; Billari, 2009). Conversely, when having small families is perceived as a key to a purposeful life that will produce long-term happiness, replacement fertility levels become a far easier policy objective.

It follows, therefore, that in democratic societies, that respect the individual right to determine family size, demographic policies need to change attitudes. Economic incentives are important, by shifting the “cost – benefit” equation at the individual level and requiring families to internalize the full costs of a large family. But it is rare that the decision to have children is based solely on economic calculations. The true benefits of two-child households are seldom recognized in societies which have historically venerated large families (Shi, 2016). At the same time, the drawbacks of homes with a high number of children often go unrecognized or underappreciated in the impaired vision clouded by cognitive dissonance (Kohler, 2015).

Gary Becker won the Nobel Prize in Economics, inter alia, for his analysis of fertility decisions (Becker, 1960, 1991). Becker hypothesized that two objective contributions to the phenomenon were the availability of effective contraception for women and the precipitous drop in child mortality. But he also observed that there was a change in the way the

Table 2. Policies Directly promoting policy goals.

Goal Directly Promoted	Example	Country
Quality children	Promoting quality children rather than quantity of children	Singapore
Advanced Socio-economic development	Family planning strategic plan, promoting the use of	Rwanda & Malawi
Access to Universal education	contraception; explaining the benefits to health and prosperity of the family	
Gender equality		
Empowering women		
Improved maternal health		
environmental sustainability		
Increased family's prosperity		
Empowering women and reduced family size	Distributing birth controls, and hope; advocating for three child families	Ethiopia
Healthy family relationship	Drama radio shows	PMC, Rwanda

costs of raising children were perceived in modern society. The range of direct expenses has dramatically expanded, with basic needs, such as shelter clothing and food comprising just a fraction of the present price tag associated with producing what Becker called “quality” children. Fashionable consumer goods, after school enrichment, edifying vacations, therapies and entertainment all have become part of the package and the resulting expense can be enormous. That’s without including the actual costs of providing the *quality* education required to reach high *quality* children. Having the resources to ensure that one’s children succeed, it turns out, is an important component of parental well-being.

In his research on fertility and economics, Becker, documented a process, highly germane to the articulation of the positive benefits provided by small families. As women gain greater professional opportunities, their work becomes a source of enjoyment and satisfaction. Taking care of children is a time-intensive responsibility. But, there are only so many hours in the day. Doing a good job at child-rearing typically comes at the expense of time spent on the job. Becker showed that as women are promoted professionally, the value of their time increases - not only as valued by the labor market - but in their own eyes. When this happens, there are real opportunity costs associated with having more children (Becker, 1991). It’s not just that they may have to give up higher paying positions. It also means that they may do a poorer job and enjoy their work less when they have to meaningfully increase the amount of time raising children. Many women feel that a smaller family allows for a happier balance between the hours spent working and the hours spent raising children. Beyond the health and economic benefits, this psychological dynamic can and should be imparted to the general public.

It is also important to emphasize that large families are not necessarily happier families (Glass et al, 2016). On the contrary. This malaise starts with parents. Giving birth frequently brings with it prolonged depression. Present estimates suggest that 15–20% of women develop some form of mental health problem in pregnancy or after birth (Ayers and Sawyer, 2019). The mental health impacts are not limited to women with substantial numbers of men suffering affective disorders during pregnancy and for the first year after childbirth, which is increasingly diagnosed in the general category of Post-Traumatic Stress Disorder (PTSD) (Taubman-Ben-Ari, 2019). While this affects broader family dynamics, the economy also pays a price. In the UK alone the annual costs associated with perinatal mental health disorders are estimated to reach 8.1 billion pounds sterling (Bauer et al., 2014).

Surprising findings emerging from psychological research show low emotional well-being found among parents relative to nonparents (Margolis and Myrskylä, 2011; Senior, 2014; Simon, 2008; Umberson et al., 2010; Vanassche et al., 2013). Other reviews regarding happiness and parenting, however, provide a more nuanced picture. In particular, one of the most comprehensive studies conducted to date, involves a contrast between pairs of identical twins. The researchers found that being in partnership, as well as having one child, substantially increased well-being (Kohler et al., 2005). The authors also reported that having additional children, beyond the first child, produced a negative effect on the subjective well-being of females, without any effect on males. The same results have been confirmed in a study spanning several European countries, where happiness levels increased due to the birth of the first child but decreased thereafter for mothers with the birth of successive children (Aassve et al., 2012). Another recent comprehensive review suggests that the relationship between parenthood and subjective well-being is highly dynamic and complex, and depends on a variety of factors that configure these associations (Nelson-Coffey, 2018; Nelson et al., 2014).

The on-going debate regarding the benefits of parenting and its contribution to parent’s well-being highlights important aspects that are relevant to the present investigation. Specifically, the key factors influencing the well-being of parents (Nelson et al., 2014) are typically connected to the *number* children in the family. The confounding variables on parenthood are: negative emotions, financial problems, sleep disturbance, and troubled marriages. The supporting factors are: greater

meaning in life, satisfaction of basic needs, greater positive emotions and enhanced social roles. All these factors are affected by the number of children (Pollmann-Schult, 2014). The preponderance of empirical evidence suggests that when specific sources of frustration and satisfaction are fully considered, two children bring parents more joy than a larger number of children.

Large families appear to make the challenging dynamics of parenthood even worse. For example, when measuring moment to moment experiences with children, parents report higher levels of happiness and meaning (Musick et al., 2016). The overall experience of parents with their children is positive. At the same time, the number of children is associated with higher levels of stress (Musick et al., 2016). This research supports the intuition that large family size is also correlated with negative emotions, which in turn is one of the factors influencing the relationship between parenthood and well-being.

A significant and well researched aspect of the number of children involves the ramifications for marital satisfaction. Current research provides robust evidence supporting the association between marriage and well-being (Nelson-Coffey, 2018; Vanassche et al., 2013). In particular, it satisfies the need to belong and be connected as well as for social support (Nelson-Coffey, 2018). Yet, literature also suggests that the number of children is negatively related to this vital aspect of life. Twenge and colleagues, for example, reported that the number of children is negatively associated with marital satisfaction. Stated simply, the more children people have, the worse their marriages tend to be (Twenge et al., 2003). They also found that the effect that the number of children have on reduced marital satisfaction has grown in recent years. The negative correlation between the number of children and marital satisfaction persists in both individualistic (as confirmed recently in a major New York Times survey (Miller, 2018)), as well as in collectivist cultures (Dillon and Beechler, 2010). The same phenomenon has been identified in several Muslim countries (Esmaeili and Schoebi, 2017), and particularly in Turkey (Erci et al., 2005). Couples with children tend to quarrel more often than those without (Marjoribanks and Bradley, 2017). Increase in the number of children has been shown to contribute to higher mean levels of marital conflict in families where the mother works (Rogers, 1996). Another associated insight: the relationship between adult children and their parents is also related to marriage satisfaction. When marital satisfaction is high, the connection with adult children is better (Lee et al., 2016). This finding closes the circle regarding the connection between *number of children* and the *relationship with them at an older age*.

When myths are cast aside and available empirical data examined, the picture that emerges appears to be universal: children in large families subjectively and objectively are not better off: There is the absence of privacy and personal space (Germaine, 1978; Fouts et al., 2017); Children from large families are more prone to serious learning problems (Searcy-Miller et al., 1977; Hift, 2013); crowded homes constitute a risk factor for violence and antisocial behavior among the children (Makinde et al., 2016); children often “escape” the high density home environment and get into trouble (Greene, 1993; Ariello et al., 2013).

Finally, large families lead to a depletion of per capita financial resources among families where many children divide a fixed income (Merrick, 2002; Berthoud and Lacovou, 2006; Arbeto, 2005). In a word, there is simply “not enough of the proverbial blanket to go around” for the number of bodies who need cover. When the denominator on the family economic is increased – the product of the division comes out smaller (Pernia, 1982; Bradshaw et al., 2006; Odusola, 2018; Lawson and Mace, 2010, 2011). This is not only true in terms of available money, but also parental attention (Downey, 1995; Lawson and Mace, 2010; Wagner et al., 1985). It has been shown that the time spent with parents, particularly with mothers has a major influence on various aspects of the children’s lives such as: children’s well-being (Fomby and Musick, 2018), their reading scores (Fomby and Musick, 2018), academic achievements (Boonk et al., 2018), skill formation and development (Bono et al., 2016), and externalizing behaviors during adolescence (Fomby and Musick,

2018). Nutrition and health suffer among children in large families (Abdelaziz et al., 2014; Li and Seo, 2017); clothing is often patched-up, hand-me-downs (Mark, 2004; Sakata et al., 2018). Larger families produce more delinquents and alcoholics (Wagner et al., 1985). In African countries, for example, a negative relationship between completing school and the number of children in families has been documented (Eloundou-Enyegue and Williams, 2006). There is a greater chance of resentment and charges of favoritism (Suitor et al., 2016). Statistically, children in large families are forced to enter the work force earlier, at the expense of their education and professional opportunities (Entwisle, 1997).

The flip-side of these data of course is the relatively favorable circumstances found among smaller families: more quality time with parents, that persists through adulthood; better health, better education, more personal space; more privacy, more available money; a calmer environment; better relationship with the parents and happier parents (Lawson and Mace, 2010, 2011; Wagner et al., 1985). From the parents' point of view, beyond having higher quality children (Wagner et al., 1985), and better marriages, more time is available for the other enriching things in life, as well as their careers (Goldin and Katz, 2008). Considering all aspects of their lives together, it is easy to make the case that two children families offers better lives for both children and their parents.

A holistic design of positive demography should integrate this insight into public education and publicity of research showing the benefits of two-child families. This is not a simple task. The happier two-child reality flies in the face of the conventional wisdom deeply rooted in many cultures. But it is one that can be established through the media, literature, film and television. This potential will be highlighted in the following section, which advocates a holistic policy approach for promoting two-child families, relying on the empirical findings from the literature.

4.3. A Positive Behavioral Change Approach to Population Policy Making

The international psychological literature confirms the claim that two-child families offer a very good choice for maximizing the general well-being of both children and their parents. There is a convergence between the best choice for the *health of the planet* and the *wellbeing of its human inhabitants*. Combining these advantages with a policy aimed at directly promoting the desired goals leads to programs-promoting two-child families or a replacement fertility rate. The crucial question, however, remains unanswered. How can two-child families be promoted by effective policy design? In the following section, the main components of a positive psychology-based, behavioral change driven by demographic policy will be suggested.

Positive psychology theory includes numerous operational principles which are particularly germane for policy making with demographic objectives. One of the most effective approaches for behavioural change comes from Cognitive Behavioural Therapy (CBT) (David et al., 2018; Hofmann et al., 2012; Ronen, 2007). The core concept of the CBT approach for behavioural change lies on six thinking rules (six principles) that should be applied for any effective behavioural change (Kanfer and Schefft, 1988). The CBT approach is widely used in different areas where public policy is aimed at changing individual behavior (For instance, in social work for helping families cope with challenging situations (Ronen, 2007), in promoting public behavioral health (Peterson et al., 2018), in promoting mental health (Berliner, 2017), and in reducing crime (Heller et al., 2017). The following sections portray the main concepts of each principle and provides some examples of how these principles could be

used in demographic policy to promote individual's decision to have a family with two children. While the decision regarding the number of children is an individual decision, it is sometimes constrained by available infrastructure, similar to other decisions about environmental behavior (Baum and Gross, 2017). For instance, a decision to plan a family depends on the availability of contraceptives, and a choice to prefer better education for children depends on the availability of good schools (See Table 3). Hence, a distinction will be made between applying the following principles to the personal choice and providing the necessary infrastructure for enabling such a choice.

4.3.1. Actions rather than situations

One of the fundamental principles of CBT behavioral change involves emphasizing the availability of actions as opposed to the focus on situations (Kanfer and Schefft, 1988). In the present context, knowledge provided by policymakers that is aimed to promote the goal of two-child families should be disseminated while stressing the opportunity for action at the individual level, instead of describing overpopulation growth and its associated problems as static "situations". In other words, rather than focusing on unrelenting, demographic trends, it is well to focus on people's ability to take control of their own lives and plan their own families.

This insight is especially important, given the phenomenon of "population fatalism", which contributes to a certain resignation and paralysis among sustainability advocates. The seemingly inexorable, demographic momentum created by 7.7 billion people can be disheartening. When faced with unimaginably high numbers and deeply entrenched cultural norms, it is difficult for many people to see a roadmap forward. It is important, therefore, to send a message to the general public, as well as to experts, that when aggregated, individual actions can bring about change. Demographic stability can be deconstructed into individual actions and serve to replace a sense of *powerlessness* with a sense of *being empowered* to make the world better.

At the individual level, there are a suite of concrete actions which can be promoted to help people move beyond the paralysis created by ostensibly intractable situations, that have been used by governments in Africa and Asia (See Table 4). Particularly, the main message involves the ability to plan the desired family size and act accordingly. Thus, the message of *choice* used by Singapore, as well as in African family planning clinics encouraged *taking an action* rather than *remaining a victim* of the situation. Complementing policy measures that enable taking these actions will be explored in the next section as they are a part of the solutions.

4.3.2. Describing solutions

Public policy discourse needs to focus on solutions rather than problems. Instead of analyzing what brought on the problem of overpopulation, evaluations need to reveal the components of the problem in order to focus on practical solutions. This "hands-on", "can-do" approach is responsible for an entire literature of ecological "self-help guides", for young and old, that provides advices about how to behave environmentally (Wines, 2008; Earthworks, 1992).

The most obvious parallel for the area of sustainable demographic policy is the promotion and dissemination of birth control. Although there has been a steady increase in the percentage of women utilizing birth control globally, in light of the global population growth the overall numbers of married men and women who do not use contraception has actually increased (Sedgh et al., 2014). In other words, while the percentage of birth control utilization among women increased since 1960,

Table 3. Policies supporting two-child families and their individual and collective benefits.

The Supporting Infrastructure	Individual Benefit	Collective benefit
Quality education, Access to education	Greater opportunities for one's children; Improved economic capacity	Better education for society
Information and access to contraceptives	Ability to plan one's family size; women's individual mental and physical health	Reduced health costs; Lower fertility rates

Table 4. Policies implementing CBT main principles.

Principle	Compatible policies	Specific implementation examples
Behavior (<i>Action</i> rather than <i>Situation</i>)	Family planning	Singapore: messaging of choice; Africa: orientation of family planning clinics
<i>Solutions</i> rather than <i>Problems</i>	Subsidized daycare Scholarships for women Dissemination of contraception Abortions on demand Family relationship education Banning polygamy Rights for women in marriage decisions	Gates Foundation programs: contraceptive information, access to contraceptives,
Taking Small steps	Setting intermediate goals on the road to stabilizing population; Setting intermediate goals for individual's well-being Setting intermediate goals for children's well being	Ethiopia – setting a 3 child objective – as a “stepping stone” towards replacement fertility.
Focusing on the Positive	Better marriages; More time for each child More resources for each child More career opportunities for women Better overall family relationship	PMC – media shows highlighting the benefits; Rwanda, Malawi and Ethiopia family planning clinic messaging
Flexible	Re-thinking about life goals; Adoption; Other types of connection with children	Big brother programs; international, locally regulated adoption agencies.
Focus on the Future	Better future for humanity Better future for your children Better future for yourself	Singapore, China, public relations campaign;

the absolute number of married women and men who do not use birth control has gone up. Specifically, of the 2.3 billion people of reproductive age worldwide, some 44%, or about 1 billion people, do not use contraception (Ryerson, 2012) including 214 million women of reproductive age in developing countries who actually want to avoid pregnancy (WHO, 2018).

This is not just a challenge for developing countries. It is a common myth that women not using or not knowing how to use contraception is a phenomenon limited to developing countries. In fact, over half of women who become pregnant in the United States report it as unintended (Finer and Zolna, 2014) with a global level of 40% unplanned pregnancies (Bearak et al., 2018; Sedgh et al., 2014; Finer and Zolna, 2014). It also appears to be a universal truism that the vast majority of the world's women prefer to choose when they get pregnant – and would do so, if they could only be provided with a convenient, safe and affordable solution (Engelman, 2012).

The Gates Foundation has taken this simple insight and translated it into one of the world's most ambitious public health initiative ever. By the foundation's estimates, there are more than 220 million women in developing countries who *do not* want to get pregnant, but that lack access to contraception and family planning information. The gap is particularly conspicuous in Sub-Saharan Africa, where less than 20% of women have access to birth control. This is one of the reasons why contraception programs are often considered central to improving women's health in developing countries. Of the 80 million unintended pregnancies in developing countries, one in four end up having an unsafe abortion. Accordingly, the Gates foundation's stated objective is “to bring access to high-quality contraceptive information, services, and supplies to an additional 120 million women and girls in the poorest countries by 2020 without coercion or discrimination, with the longer-term goal of universal access to voluntary family planning” (Gates Foundation, 2018).

The problem of course is not the cost of producing the different contraception devices and medication, but their delivery, given the logistical and cultural barriers. Overcoming them is not a trivial challenge. More and more success stories are documented. The foundation's own evaluation studies in this area have not yet been reported. Yet its interventions let a growing number of women throughout the world know that their reality could be very different, offering them hope and a concrete way to change their *personal* family planning dynamics. The provision of birth control also implicitly communicates the possibility of

a dramatic *collective* shift towards more sustainable demographic dynamics.

Another aspect of providing solutions focuses on other facets of familial realities that contribute to value in life. If the main reason for having children is creating meaning for the parents, the entire spectrum of advantages from two-child families need to be highlighted, including opportunities for a successful career. Associated policy measures involve educating girls and young women; offering inexpensive day care for working mothers; and providing young women with scholarships. An additional component of the value of life relates to family relationship. Here, as well, government and nongovernment programs could provide solutions that focus on encouraging better relationship between family members. Such practical policy measures include granting women the right to decide when and whom to marry, prohibiting polygamy (and punishing polygamists) while educating parents about how to improve their family connections.

4.3.3. Small, achievable steps

A related insight in designing effective strategies for change involves the importance of charting a pathway that is lined with many, modest, but attainable benchmarks and not just a distant and daunting finish line. While cognizant of the ultimate objective, generally, the final aspiration is less relevant than the immediate tasks at hand. Anyone who has gone on a diet knows that the overall target and the desired, optimal weight can seem completely unimaginable at the outset. It makes little sense to be intimidated by the enormity of the entire mission, when smaller, achievable goals can be set. Rather than framing the diet in terms of the twenty kilograms that ultimately need to be shed, a focus on the half a kilogram that can be lost this week is a far more effective way to stay the course and reach the final goal.

Applied to family planning at the personal level, a main consideration in the decision regarding the number of children relies on expectations related the future child's influence on the personal and family's well-being (Borreroa et al., 2015; Brodziak et al., 2013; Kingsley, 1977; McAllister et al., 2016). A more holistic approach may reveal that well-being is constructed of many components. In particular, healthy relationships within the family and between spouses are major contributors to family well-being (Lawson and Mace, 2011; Nelson-Coffey, 2018; Vanassche et al., 2013). Moreover, the education and employment of the mother are main constructs of the family's well-being (Aarsen and

Altman, 2012). When framed more holistically, the goal to improve well-being should also be observed following the ‘small steps’ principle. Improving well-being could be by gradually learning parenting techniques, investing more time in the marital relationship, spending more time with the children and devoting resources to their education. While the outcomes of such actions might take time to be observed, small steps are necessary to advance the whole family towards a better state. Here, setting small measurable goals could be steady iterative progress over time.

At the policy level, a similar approach could be applied. A strategy for attaining stable and sustainable population levels must appreciate this aspect of human nature. People need to feel progress as they attempt to move forward towards what can often seem to be an overwhelming destination. Practically, focusing on universal literacy among girls and women may do little to engender enthusiasm or generate resources for a rural education program. On the other hand, a measurable and steady 5% annual literacy increase can create a “proof of concept” for funders – public, private and philanthropic – strengthening the stamina that will be needed to support a given intervention over the long-run, while giving role models to other girls that demonstrate the benefits of education. The same is true for a range of *output* indicators, like the number of family planning classes or counselors, perception of people with access to contraception, that need to supplement actual *outcomes*, like fertility levels, the ultimate indicator of a successful, sustainable population program.

Absent the horrors of war, plague or famine, stabilizing population is an inherently protracted process. This is especially true when life expectancy is rising. Stabilizing population size, even after total fertility drops below replacement levels typically takes two to three generations. China's one child policy is a case in point. This draconian intervention began in 1979, and Chinese birth rates have been below replacement levels since the early 1990s. Yet, due to demographic momentum, the country's population continues to grow at 0.5 percent and is only expected to stabilize in 2030 (World Population Review, 2019). To reach such distant objectives, it is a far more effective strategy, psychologically and politically, to set and monitor more modest, measurable milestones along the way to *equilibrium*.

4.3.4. Positive thinking

To encourage behavior, its intrinsic benefits should be stressed. As elaborated above, many benefits of having twochild families exist for both family members as well as for society and the biosphere. A policy promoting two-child policies should communicate these benefits (See Tables 1 and 4). In different aspects of environmental domains, knowledge is particularly important for the following reasons: First, individuals fail to fully grasp the environmental consequences of their activities and the most suitable means to address existing problem (Baum and Gross, 2017). This is particularly true in matters of demography as the public is even more reluctant to grasp population growth as an environmental problem (Clark, 2016; Carmi and Tal, 2018). More specifically, in order to influence behavior, knowledge must overcome existing biases and become better tailored to individual goals (Baum and Gross, 2017). Understanding individuals' decisions and the contexts that may influence them, therefore, are essential for constructing an effective policy (Bandura, 2011; Baum and Gross, 2017). Also, when information is not specifically tailored to address biases, people tend to prefer unsupported knowledge that fits their historic ways of thinking and existing behavior patterns.

Demographic theories consistently suggest that the value of children has transitioned from economic utilitarian values to social normative dynamics. Having quality children requires increasingly high level of parental investment (Becker, 1960, 1991; Bono et al., 2016; Boonk et al., 2018; Fomby and Musick, 2018). Parental attention is ultimately a zero sum dynamic: the fewer offspring there are, the more care parents can provide (Lawson and Mace, 2011).

To harness these motivations, the importance of investment in children should be highlighted by disseminating the relevant knowledge. Frequently, decisions about how many children one wants to have are informed by biases that cloud individual judgement. When making a decision, people tend to focus on a particular aspect around which the decision centers and neglect all other aspects in life (Kahneman, 2011). Accordingly, when a couple decides to have a third or fourth child, attention is directed to how wonderful the first and second children are, without considering other aspects of life - such as the consequences for spousal relationships, professional development, economic constraints, reduced time spent with each child etc. Public policy can help citizens widen the scope of their considerations and communicate the existences and implications for other factors.

At the internal factors level, the intention to have children is a good predictor of fertility (McAllister et al., 2016). It is influenced by prevailing social norms and is therefore affected by the socio-cultural context (Baum and Gross, 2017). While emphasizing the inherent individual benefits for children and parents, raising the ancillary societal and biospheric benefits of two-child families can make a contribution to making population stability a collective goal for society. This strategy was successfully used both in Singapore and Iran, highlighting the societal advantages of having two children (Weisman, 2013). It is also an underlying theme in the media dramas produced by the Population Media Center (PMC).

According to the Social Cognitive Theory (SCT), three aspects of human behavior must be considered for meaningful change to take place: personal factors (knowledge, expectation and affect); behavioral factors (skills, self-efficacy) and environmental factors (reinforcement, social norms and influence). SCT has emerged as the theory most widely used in online interventions of behavioral change (Arguel et al., 2018). Interventions, include relying on the self-efficacy principle (promoting self-belief in achieving goals) and using role models that allow for social influence or observational learning (through video clips, discussion forums and questions and answers with experts) (Arguel et al., 2018). All these interventions should highlight the positive aspects of having small families.

4.3.5. Flexible thinking

Positive psychology encourages nimble ways of responding to the challenges presented by life. Being flexible means putting a positive spin on ostensibly negative situations and finding the proverbial “silver lining”. Rather than seeing constraints or receiving bad news as a set-back, it can be transformed into an opportunity to find a new way forward with even greater benefits. Environmental examples of such flexibility abound: finding non-toxic alternative substances to ozone depleting chemicals; enjoying the quality of non-disposal products relative to disposables, biological pest controls in lieu of insecticides; or even the relative healthiness and rich variety of vegetarian fare versus a meat-based diet.

Applying this approach to the decision to have children requires that couples understand their motivation for having a large family. If the main reason lies in the desire to improve their well-being, other aspects of life should be considered as well. Acknowledging research findings about the negative impact of large families on well-being may direct attention to other options for improving couples' lives, such as investing more attention in their relationships and advancing their education or careers. In cases where the desire to have more children persists even after the impacts on all other aspects of life are internalized, one “flexible” opportunity for a couple is the possibility of adoption. With 140 million orphans in the world (UNICEF, 2015), adopting a child offers well-known, win-win dynamics: helping a family who wants a child, and helping a child who wants a family. This is especially true in a world where many Western countries have below replacement fertility rates. At the same time, most orphans live in developing countries. This sort of trans-continental adoption has been described as a concrete way to help heal a broken world (Silverman, 2016).

There are other ways to offer a meaningful connection with children for adults who miss engagement with the younger generation. Creating intergenerational dynamics and new community frameworks offer the advantage of lasting relationships beyond the time that children would otherwise grow up and leave. Sports coaching, tutoring, religious community teaching – are among the numerous options. A campaign informed by positive psychology will focus on the advantages of being involved with children and youth, without the loss of freedom and financial burden that parenthood brings.

4.3.6. Focus on the future

Focusing on improving one's children's lives, while investing more available resources in fewer children constitutes a *future* orientation. Providing the best of one's time, attention and resources for their benefit offers the the most promising strategy for a better future for them. Instead of blaming and criticizing the past, a future-focus prefers to look towards a hopeful future, where population is stable and the planet is safe. This also means a perspective that embraces human being's ability to change unsustainable trends. When families choose to plan for a replacement level of fertility, it is an act of faith of sorts. It anticipates that other couples will follow the same course. It expresses a rejection of the resignation, implicit in population fatalism. Choosing to have a 2-child family essentially says: "people created the population crisis; people can solve it". Focusing on the future means that individuals should make decisions which will produce the optimal outcome for them and offer a sustainable way forward for humanity.

5. Conclusions

This paper proposes an innovative lens for addressing overpopulation growth by applying a 'positive sustainability' conceptualization. We first showed how traditional discourse of population growth, focused on reducing and stopping overpopulation. But highlighting the gravity of problems yielded only limited progress. After emphasizing the fact that the extent of demographic growth involves the global aggregation of the most private of individual decisions, we emphasized the importance of understanding individuals' fertility considerations in and deconstructing the decision to have children. We then turned to our main thesis, offering another viewpoint. First, a reverse framing was proposed: instead of defining the problem as *overpopulation*, we suggest promoting a better life through two-child families. Examples from real world policies that employed different strategies were provided, leading to the conclusion that when policies frame demographic issues differently, results have been more effective. Promoting two-child families, along with the additional societal benefits they bring with them, such as: healthy environments, quality children, empowerment of women and better family connections, are all associated with directly promoting the desired values of the policy.

The second challenge we then addressed involved finding the convergence between the desired goals on the societal and biospheric levels and the well-being of individuals. Citing several studies that evaluate the associations between various aspects of well-being and family size, we concluded that having families of two children offers many benefits for all family members – both parents and their children. These dynamics need to be integrated into promotional efforts and widely disseminated in culturally appropriate messages. Last, we recommended conceptual thinking for policy makers, by adopting a combination of these two concepts. Assuming that policies acknowledge the value of two-child families and benefits of directly promoting such a policy, how should implementation proceed? The last section offered a sketch for constructing such policies, basing on a positive psychology conceptualization. While thoughtful, site and culturally-specific policies will ultimately need to be designed, our goal was to offer the main components and factors such policies should consider.

This article offers a general conceptualization of positive psychology's approach to sustainable population promotion. Naturally, each country

has its own idiosyncratic anthropological characteristics that affect individual motivation to have children. Even within countries, different societal groups typically have contrasting individual motives and face dissimilar influences on their fertility decisions. Hence, additional local studies are necessary to determine the context-specific policies that fit given circumstances. We believe that a positive psychology conceptualization offers a promising way to re-think the design of demographic policies, offering a more holistic and effective strategy that can lead to a more stable and healthier planet for all its inhabitants.

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