
The Rhetoric and Reality of Gap Closing

When the “Have-Nots” Gain but the “Haves” Gain Even More

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Many forms of intervention, across different domains, have the surprising effect of widening preexisting gaps between disadvantaged youth and their advantaged counterparts—if such interventions are made available to all students, not just to the disadvantaged. Whether this widening of gaps is incongruent with American interests and values requires an awareness of this gap-widening potential when interventions are universalized and a national policy that addresses the psychological, political, economic, and moral dimensions of elevating the top students—tomorrow’s business and science leaders—and/or elevating the bottom students to redress past inequalities and reduce the future costs associated with them. This article is a first step in bringing this dilemma to the attention of scholars and policymakers and prodding a national discussion.

Each year, America allocates a large sum of its budget and tax dollars to improve the health, educational, social, and financial outcomes of its children. Toward this end, American educational, public health, social service, and other governmental agencies invest billions of dollars in various forms of intervention (e.g., the 2004 Federal Budget requested \$12.4 billion for Title 1, over \$1 billion for reading programs [e.g., *Reading First*], and the modernization of programs designed to provide \$40 billion over 10 years for health care coverage of low-income, uninsured children [SCHIP]). These interventions run a gamut from highly targeted programs to remediate specific deficits (e.g., providing special services to teach poorly performing children basic number skills or to enhance the reading comprehension skills of middle school students), to somewhat less targeted programs aimed at increasing access to health care for the poor or reducing social problems (e.g., juvenile delinquency, drug abuse, emotional neglect, etc.) of children deemed to be at risk, to very broad interventions that are not targeted to any group, such as providing tuition subsidies to increase college matriculation rates (e.g., Hope scholarships). We refer to these latter interventions as *universalized interventions* to distinguish them from those that are targeted to a high-risk or disadvantaged group.

One motivation for targeted interventions is what theorists from multiple disciplines (e.g., economics, sociology, psychology) have described as the *Matthew effect*. Although the Gospel according to Matthew (“For unto every one that hath shall be given, but from him that hath

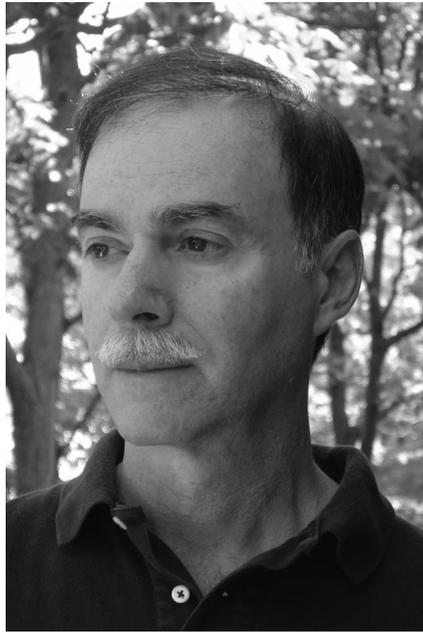
not shall be taken away even that which he hath”) in its original biblical sense referred to the amplification of one’s initial faith that results from initially stronger faith held by one group, contemporary thinkers have invoked it to refer to the amplification of any initial advantage (e.g., economic resources, health status, cognitive ability) that leads to cumulative differences that widen preexisting gaps (Walberg & Tsai, 1983). For example, in the domain of early reading, Shaywitz et al. (1995) succinctly summarized it as “the notion of cumulative advantages leading to still further advantage or, conversely, initial disadvantage being accentuated over time” (p. 894). This effect has been observed in numerous areas affecting children (e.g., in the use of cognitive strategies [Gaultney, 1998] and comprehension [Nicholson, 1999; Stanovich, 1986]), as well as in areas affecting adults (e.g., pay differentials [Tang, 1996] and accumulation of scientific prestige [Merton, 1968]).

The basic idea of a cumulative, or “multiplier,” effect is not new; Stanovich (1986) discussed the concept in terms of the principle of “organism–environment correlation” to show that disparity increases when children with different genotypes or from different backgrounds are selectively exposed to different types of environments:

The very children who are reading well and who have good vocabularies will read more, learn more word meanings, and hence read even better. Children with inadequate vocabularies—who read slowly and without enjoyment—read less, and as a result have slower development of vocabulary knowledge, which inhibits further growth in reading ability. . . . Children who become better readers have selected (e.g., by choosing friends who read or choosing reading as a leisure activity rather than sports or video games), shaped (e.g., by asking for books as presents when young), and evoked (e.g., the child’s parents noticed that looking at books was enjoyed or perhaps just that it kept the child quiet) an environment that will be conducive to further growth in reading. Children who lag in reading achievement do not construct such an environment. (pp. 381, 382)

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However, what *is* new is that researchers have recently developed formalisms to explain and predict the manner in which early advantage accumulates over time, exceeding expectations based on additive assumptions. Recently, economists, psychologists, and political scientists have provided theoretical frameworks to explain why the rich seem to get richer by “multiplying” original intellectual, economic, and social capital so that early differences widen over time (e.g., Bast & Reitsma, 1998; Dickens & Flynn, 2001).

Various agencies of the U.S. government, in an effort to impede the buildup of a cumulative gap between the nation’s most advantaged and disadvantaged children, have created targeted interventions that are designed and implemented with the goal of reducing disparities between these two groups. Interventions of this type aim to reduce group differences primarily by elevating the performance of the lowest group—whether the group is identified as poor, minority, low ability, or socially at-risk—toward the level of the higher group. For example, myriad interventions have been designed to reduce racial or socioeconomic disparities in educational performance, some of which have been benchmarked by changes over time in the gap between ethnic groups’ National Assessment of Educational Progress scores (Grissmer, Kirby, Berends, & Williamson, 1994; Hauser & Huang, 1998), Head Start being a paradigmatic case. Although it is impossible to estimate what portion of all interventions have as their core goal the narrowing of racial, ability, income, social, and developmental gaps, countless examples can be cited that were designed with this aim (e.g., decades of Title 1 funds for enhanced reading instruction have been targeted to school districts that serve poor and minority students).

We assume that most Americans endorse these interventions on their face value; remediation of low perfor-

mance is justifiable not only on humanitarian and moral grounds (e.g., to compensate for decades of discrimination and power differentials) but also on purely economic grounds. For example, an entire subfield of sociology of education focuses on the fact that the lowest performing students often end up less educated, earning less, paying less tax, being incarcerated at higher rates, and using social services and welfare benefits disproportionately (e.g., Gruber, 2001; Hallinan, 2000). Thus, on economic grounds, anything that can be done to prevent school failure from occurring (or to remediate it quickly after the first signs appear) seems like a rational economic choice.

It turns out, however, that when these gap-narrowing interventions are universalized—given not only to the group of children who most need assistance but also to the more advantaged group (regardless of whether the latter is identified as White, rich, high ability, etc.), a surprising and unanticipated consequence sometimes occurs: The preintervention gap between the disadvantaged group and the advantaged group is actually widened as a consequence of making the intervention universally available. This is because, as we will show, although the disadvantaged children who most need the intervention do usually gain significantly from it, the higher functioning or more advantaged children occasionally benefit even more from the intervention. The result is increased disparity and a widening of the gap that existed prior to universalizing the intervention. This has led a prominent intervention researcher to bemoan the major drawback of universalization that “makes nice children even nicer but has a negligible effect on those children at greatest risk” (Offord, 1996, p. 338).

For example, in Figure 1 we use a portion of the data from two studies conducted by Borkowski and Peck (1986) in which they examined training and transfer of strategies among gifted and nongifted children. As one part of their study, Borkowski and Peck administered a metamemory battery prior to and after a training intervention for children (seven to eight years of age) on a variety of cognitive strategies. As shown in Figure 1, prior to this training, gifted and nongifted children differed significantly on total metamemory, $t(74) = 4.48, p < .01$, with gifted children demonstrating significantly higher metamemory skills. More important, following the training intervention, this preexisting gap widened even further, $t(66) = 5.21, p < .01$. Moreover, these researchers found that on a far-generalization test, gifted children performed much better than nongifted children, demonstrating transfer of the strategy to a new, dissimilar, task.

In the next section we bolster this claim with examples from multiple domains that demonstrate that although an intervention may be successful for both advantaged and disadvantaged students, it may work far better for the former. The question we pose in this article is whether this sort of outcome, that is, increasing the gap between the less and the more advantaged, is necessarily an undesirable outcome. That is, is offering interventions designed for lower functioning groups to higher functioning groups—when it can be shown that the latter will also benefit from



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them—a harmful policy, if it results in gap widening? If both groups benefit from an intervention, then is it not in the national interest to elevate the higher performing groups as high as possible in order to groom the next generation of scientists, engineers, politicians, and business leaders to be competitive with the nation's international trading partners? Or will this militate against national interests by allowing the higher group to further multiply its initial advantage and, as a result of universalizing such interventions, increase their share of social and economic resources and their demographic monopoly of future elite roles?

Figure 2 depicts a hypothetical representation of variations on this potential gap-widening effect. In it, when the intervention is targeted (i.e., made available only to the disadvantaged group), the disadvantaged children usually gain significantly—sometimes closing the gap entirely or at least a major portion of it (see Figure 1a). However, when the intervention is also made available to the advantaged group, the preintervention gap is not reduced. On the contrary, sometimes, as will be seen, the gains exhibited by the two groups of children are linear, with both increasing their preintervention scores by the same amount (see Figure 1b). In the Borkowski and Peck (1986) study that was depicted in Figure 1, this was demonstrated on a well-trained task, after which both gifted and nongifted children learned and used strategies effectively in both maintenance and near-generalization sessions. At other times, however, the effect of universalizing an intervention is nonlinear, with the result being that it exacerbates preexisting gaps because the advantaged children gain disproportionately from it (see Figure 1c).

A fourth outcome could also be added to Figure 2; namely, an intervention could be designed in a tightly

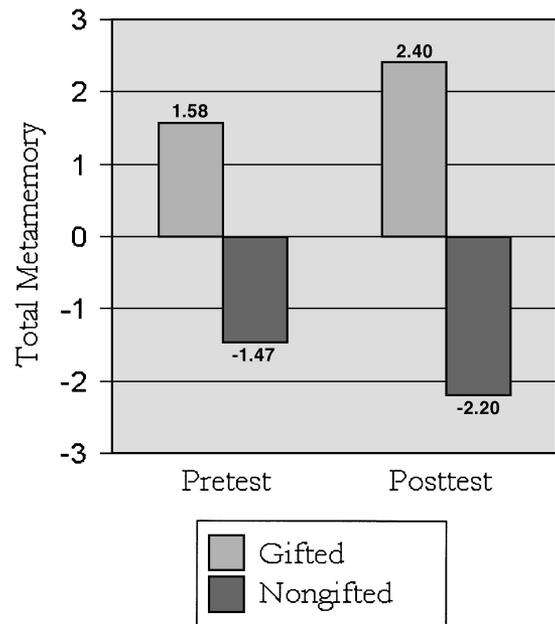
targeted manner yet be made available to all children. For example, a reading program aimed at teaching sound-symbol correspondences could be made available to all children, including those who already had this skill. This would result in a gain by the disadvantaged children only, even though the intervention was also made available to their advantaged peers. We suspect that such interventions would be rare when resources are limited and it was known that the advantaged group would not benefit.

Before addressing the question of whether universalization of interventions is incongruent with the national interests, we note four caveats:

1. For the purposes of this discussion, the term *disadvantaged* does not refer to inherent social or biological predispositions but rather to cognitive, economic, or social disadvantage in terms of measured performance, which is unfortunately often correlated with membership in groups of particular age, socioeconomic status (SES), or ethnicity. As we contend later, any discussion about targeting or universalizing interventions must be careful to distinguish cases in which differences in performance reflect variation in innate abilities as opposed to variation in environmental factors (e.g., access to resources, institutional impediments), for which compensatory measures can be taken.

2. Targeted interventions, by their very design, are often given only to the portion of the population for whom

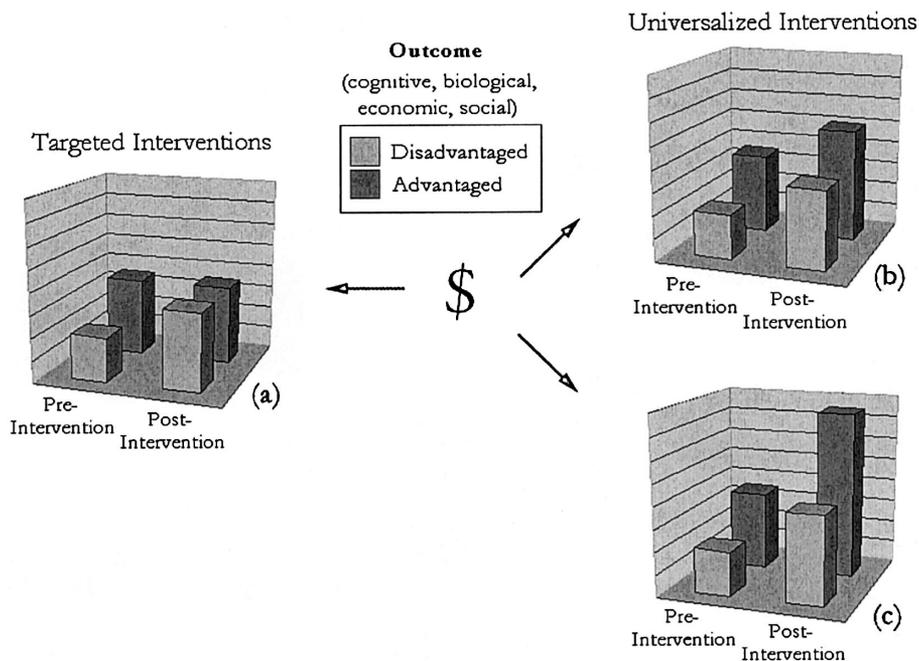
Figure 1
Total Metamemory Scores of Gifted and Nongifted Children Prior to, and Following, Cognitive Strategy Training



Note. Data (means and *p* values for analyses on total metamemory scores) are from Borkowski and Peck (1986). Metamemory totals scores were calculated as the sum of transformed (*z*) subtest scores in order to weight the subtests equally.

Figure 2

Hypothetical Representation of the Matthew Effect When Targeted Interventions Are Universalized



Note. (a) Disadvantaged children gain significantly—sometimes closing a preexisting gap entirely or at least a major portion of it—following a targeted intervention. (b) The preintervention gap remains following universalized intervention, with both increasing their preintervention scores by the same amount. (c) The preexisting gap is exacerbated because the advantaged children gain disproportionately from an intervention.

the program was originally intended (e.g., poor readers; youth at risk for drug abuse; credit-constrained college-aged prospective applicants). Thus, although we present numerous examples from the scientific literature that demonstrate gap widening when such interventions are also made available to higher performing groups, this is not a typical practice in educational, economic, and social programs. One of the questions we ask in this article is whether it ought to be.

3. We are not claiming that such gap widening ineluctably occurs when interventions are made available to higher functioning groups. Clearly, many interventions provide training in areas in which the higher functioning group has already mastered the skills (e.g., programs designed to teach poor readers sound-symbol correspondences that have already been mastered by good readers). However, to the extent that such gap widening can be induced by making certain interventions available to everyone who could benefit, this poses some intriguing and thorny social policy questions that have not been dealt with by academic or government policymakers. In fact, the basic observation that gap widening sometimes occurs when interventions are given to all children who could benefit from them is known by very few policymakers and researchers, who may even anticipate the opposite.

4. Some might argue that the disadvantaged groups may fail to benefit from interventions, not because of any

innate deficiencies but rather because of a long history of power differentials, racism, and more subtle forms of institutional discrimination that moderate the effectiveness of interventions for them. This is certainly a very reasonable point, but it is beyond the scope of the present analysis. Perhaps if it were possible in the real world to remove all such roadblocks, the disadvantaged groups would benefit as much from interventions as their more advantaged peers. We later discuss the practicality of targeting disadvantaged students whose potential may be impeded by external constraints. However, we address our arguments here to interventions taking place in the real world and to their real-world consequences, acknowledging that the real world is characterized by multiple, interrelated sources of variance differentially distributed among groups receiving interventions.

Mechanism for Disproportionate Gains

In Part 1 of this article we provide a taxonomy, within which we describe illustrative examples of gap widening across multiple domains (cognitive, economic, developmental, social, biological). In Part 2 we probe some of the most salient (at least to us) psychological, economic, ethical, and political aspects of this issue. In Part 3 we conclude with some historical context for this question, sug-

gesting that no consensual goals exist today to guide interventions—a state that has always been true in America.

Part 1: A Taxonomy of Gap Widening

As noted earlier, the Matthew effect describes a “fan spread” of disparity wherein higher functioning groups benefit disproportionately more from some common experience (Walberg & Tsai, 1983). When interventions are made available to advantaged and disadvantaged groups, two alternative explanations seem to be responsible for the gap-widening effect when it occurs. A *performance*-based benefit operates when both the advantaged and disadvantaged groups participate in the same intervention but the former group performs disproportionately better on some outcome measure. Here, differences can be measured at the level of individual performance (e.g., reading scores). Alternatively, a *utilization*-based benefit results when an advantaged group garners disproportionately greater benefit from an intervention as a function of a greater access to, or willingness to utilize, the intervention program (e.g., greater eagerness to take advantage of an after-school program designed to augment school learning) over disadvantaged groups (who may refrain from participation because of a history of discrimination, distrust, or powerlessness). Here, differences are considered at the group level. Next, we give examples of gap widening as a function of both types of mechanisms.

Performance-Based Benefits

We begin with several examples of experimental educational interventions that contrasted the performance of nongifted students to their gifted peers. Such performance-based interventions provide evidence of the potential for gap widening when traditionally targeted interventions are universalized. Earlier we described the findings of Borkowski and Peck (1986), who demonstrated gap widening when a strategy-training intervention disproportionately benefited the gifted students. In another example within the same domain, Scruggs and Mastropieri (1988) demonstrated that in high-structure and low-structure strategy training, gifted students significantly outperformed nongifted students in terms of training, transfer, and retests and on a number of strategies reportedly used. *Hence, such interventions result in greater progress for the gifted children than for their nongifted counterparts even though the latter usually also make some progress.*

Looking across rather than within age groups, one sees that a similar gap widening occurs as older children increase their advantage over their younger counterparts when they are offered the same intervention given to younger children. For example, Jones, Ridgeway, and Bremner (1983) demonstrated differential gains for strategy acquisition across developmental levels. In their study, 84 children were divided into three age groups, ranging from 5 to 12 years of age, and were tested on a memory task both before and after being given an intervention in the

use of a mnemonic strategy. All age groups improved their performance after the strategy-training intervention. In the younger groups, only those children given performance evaluation questions used the strategy in a subsequent task. However, the oldest children in both the evaluation and nonevaluation groups spontaneously transferred the strategy to the new task, improving their performance even more, thus widening their preintervention advantage over the younger children. Similarly, Ruiz (1985) observed this same type of effect across SES levels, reporting that high-SES adolescents showed greater gains in academic performance than lower SES counterparts when exposed to a well-known cognitive intervention program called *Instrumental Enrichment* (see Savell, Twohig, & Rachford, 1986).

Of course, not all cognitive interventions are designed to teach strategies such as those described previously. Penno, Wilkinson, and Moore (2002) tested an intervention to increase vocabulary growth from repeated listening to stories and teacher explanations of target vocabulary words. They reported that although the intervention improved the vocabulary of all children, analyses of pre- and posttest vocabulary measures revealed significant interactions between testing conditions and children’s ability. Of particular relevance to this article is their finding that higher ability children demonstrated significantly greater benefit from both the repeated exposure and the explanation of target vocabulary words (i.e., greater accuracy in the use of target words). Extending this type of finding to social class disparities, Cooper, Charlton, Valentine, and Muhlenbruck (2000) provided a meta-analysis showing that summer school programs (whether for remediation or enrichment) often have larger beneficial effects for middle-class than for low-income students.

The previous examples of cognitive interventions—and numerous similar ones—reveal their potential for exacerbating preintervention differences between more advantaged and less advantaged students if they are made available to the former. If society deems the improvement of *all* children as a paramount goal, regardless of preexisting differences, then such demonstrations may not pose a problem because they elevate the advantaged group to levels greater than what could be achieved by them in the absence of the interventions. However, if policymakers intend some cognitive interventions to close preexisting gaps, then such demonstrations underscore the need for more focused, targeted interventions that boost the lower scoring group without adding to the higher scoring group’s preintervention advantage. We take no position on this question but rather wish to bring these effects to the attention of policymakers in the hope that they will generate a national discussion of this important, but heretofore unrecognized, or at least undiscussed, possibility. Should those interventions that can be shown to disproportionately benefit higher functioning groups be universalized? Or, should society strive to narrow gaps between the cognitive and social “haves” and “have-nots” by restricting the availability of those interventions that are potentially beneficial to the higher functioning group?

Utilization-Based Benefits

So far, we have been giving examples of the unanticipated consequences of making an intervention targeted to lower functioning students available to all students, regardless of ability, age, or social class. But myriad publicly and privately financed programs exist that are not targeted to any particular group or, if they are intended for disadvantaged groups, they are nevertheless made universally available for political reasons. These programs include many community-based services that are made available to anyone wishing to use them. The concept of “uptake” is invoked by program planners to describe programs that are universally available to all groups even though they were designed for disadvantaged groups. For some social programs, the advantage of being made universally available is that the people who have the greatest need for the intervention may be more likely to utilize it than their more advantaged peers if it is not advertised as a program targeted to them. Hence, such programs actually end up being implicitly targeted to disadvantaged groups yet made politically acceptable to taxpayers because the programs are ostensibly open to all groups.

Below, we describe another aspect of this concept of uptake—namely, the degree to which social programs become more palatable to taxpayers when they view them as a potential benefit to them, even when they are not its primary audience. The U.S. House and Senate bills regarding prescription drug privileges by Medicare (H.R. 1 and S. 1, respectively) are a case in point: Even though the majority of the elderly have the financial means to purchase their drugs, approximately 38% do not. By making the program available to 100% of the elderly, it becomes more politically acceptable to voting groups.

Such interventions provide yet another window into the gap-widening problem we have been describing. As we show, even if such interventions provided proportionate gains to all recipients, on a population level the higher functioning groups sometimes benefit more because they are more likely to utilize them, thereby unintentionally widening preexisting gaps. Below we provide examples of how these universal interventions may also contribute to the Matthew effect. As in the previous examples, our intention is not to provide a comprehensive survey of such programs but merely to show that some nontargeted interventions disproportionately benefit those from advantaged backgrounds, regardless of whether this is defined in terms of social class, achievement level, race, or age.

Spoth, Redmond, Hockaday, and Shin (1996) investigated various factors in the social domain that contribute to participation in drug/alcohol abuse programs and problem behavior prevention programs. They show that lower SES families often display a higher resistance to participation in interventions that deal with family matters. Barriers to utilization of such programs included time and scheduling factors, perceptions about children’s risk levels and intervention benefits, assessment and privacy issues, and family member influences.

For example, Spoth et al. (1996) found that SES was inversely related to barriers associated with privacy concerns; lower SES families had more reservations about privacy violations. They also noted a negative correlation between research-related concerns and education and income. Taken together, their findings indicated that lower SES families show a higher resistance to outside involvement in family affairs, thus creating a barrier to interventions that is less apparent in higher SES families. The result is that children from advantaged families can be expected to utilize such interventions more frequently and, as a result, advantaged families benefit more from them, thereby widening any preexisting gaps.

In the economic domain, similar examples of utilization differences exist. Many economic interventions are made available without regard to income or SES, with the result that these interventions end up disproportionately benefiting middle- and upper-income students. For example, Dynarski (2000) showed that President Clinton’s Hope scholarships benefited college-bound students who came from middle- and upper-class homes more than they benefited poor students (i.e., middle- and upper-class students were more likely to use them). This favoring of students from advantaged backgrounds was apparent even after controlling for cognitive aptitude (see also Cameron & Heckman, 1999, for similar results). Along the same lines, Stanley (1999) found in a retrospective analysis of Korean War veterans that college subsidies associated with the various provisions of the GI Bills were used disproportionately by returning veterans from advantaged backgrounds. Once again, gaps that may have existed prior to the implementation of these nontargeted interventions were widened as a result of the differential utilization of such programs, regardless of whether the programs were intended to produce this effect.

Broader Examples

We conclude this section with examples of well-known universal interventions that play prominent roles in the lives of today’s children. These broad examples of nontargeted programs demonstrate both the performance effect on gap widening as well as a widening effect associated with different utilization rates.

Student loans and work study. A dramatic example of the rich getting richer as a consequence of universal access to federal financial aid can be seen in the way that wealthy universities have garnered federal resources well in excess of those given to less wealthy universities. For example, according to an analysis of federal data on over 4,000 universities by *The New York Times* (Winter, 2004), universities that are members of the Ivy League receive 5 to 12 times the median amount of federal financial aid per applicant that is given to the rest of the nation’s colleges to run their low-interest loan programs. The Ivy League universities are also given over 500% of the median federal aid to pay work-study students.

Sesame Street. For the past 30 years *Sesame Street*, sponsored by the Children’s TV Workshop, has been the crown jewel of the Public Broadcasting Service

and has held its position as a leading influence on young children's development. *Sesame Street* was originally proposed as a means of promoting the development of preschoolers, especially disadvantaged ones (Liebert, 1976). From its inception, however, this intervention was universally distributed and was never intended to be available only to disadvantaged children.

Early analyses of *Sesame Street* by the Educational Testing Service (ETS) appeared to show that increased viewing of the show did, in fact, promote improved intellectual development mainly of poor children, thereby narrowing the achievement gap between disadvantaged and advantaged children (Ball & Bogatz, 1970; Bogatz & Ball, 1971). However, subsequent analyses of the same data by Cook et al. (1975; see also Cook & Conner, 1976) revealed errors in the original ETS analyses and showed that differences in viewing habits between middle-class and lower-income families actually widened the intellectual gap between these groups.

The Advanced Placement Program. Advanced Placement (AP) classes offer high school students an opportunity for an accelerated academic experience, one that can lead to students' accruing college credit while still in high school. AP classes can be considered a nontargeted cognitive intervention because among its stated purposes are to enhance all students' prospects for admissions to selected colleges, allow all students to earn college credit before matriculating in college (hence it is also a financial aid intervention), and give schools an incentive to upgrade their pre-AP-level courses so that students who take these courses are academically ready for the AP curriculum (Furry & Hecsh, 2001). Thus, like *Sesame Street*, AP classes are an example of nontargeted interventions because they are made available to all eligible students who attain a given level of achievement, without regard to income or race. Unlike *Sesame Street*, however, AP offerings were never intended to narrow the gap between advantaged and disadvantaged students. Because of the self-selection process involved in deciding to take AP courses, this intervention was primarily utilized by the highest performing groups of achievers.

In a study by the California State University Institute for Education Reform, Furry and Hecsh (2001) reported on the characteristics and performance of AP classes in California. In their analysis, students from families of higher SES overutilized AP offerings vis-à-vis those from families of lower SES. Among their myriad findings were that (a) ethnic groups differ in participation rates in AP programs (African Americans, Native Americans, & Hispanics participate at much lower rates than Asians and Whites in proportion to their respective enrollments); (b) it is difficult for smaller, rural schools to offer AP courses because there are not enough qualified students to make the classes financially feasible, and they have fewer funds to enlist specialized resources; (c) AP class sizes in higher SES schools are greater than they are in lower SES schools, the result of a greater demand by higher SES students. In sum, Furry and Hecsh concluded that AP exam performance was closely tied to socioeconomic characteristics of schools: A

higher SES student body was associated with better performance. *So, although lower SES students do garner benefits from AP courses when they are made available to them, in terms of group means their higher SES counterparts benefit much more from this program, which was designed to help all students.* (It is not clear that differences in the utilization rates of AP classes persist after controlling for students' ability levels.)

Technology. The availability, distribution, utilization, and impact of technology are forms of nontargeted intervention when they have been earmarked to aid the academic performance of all children. On the basis of information from Quality Education Data, Rockman (1995) described how computers, even when present in both poorer and wealthier schools, are utilized differently. Specifically, disadvantaged students use computers for isolated skill development and remediation, whereas students of higher SES use computers for more independent and creative projects. According to Rockman, computer instruction for disadvantaged students is often qualitatively poorer; their teachers are less prepared to take advantage of computers, and there is a lack of integration of computer work with classroom curricula. All of these factors contribute to a disproportionate gain by higher SES students, even when access to technology is equalized. Hence, once again there is evidence of gap widening—this time as a consequence of a nontargeted technology intervention that is utilized differently by groups.

Medicine. One of the most prominent areas in which interventions have been utilized differently to create greater disparity between the rich and the poor is in the area of medicine and health care. The profit-driven nature of many medical interventions virtually guarantees that any preexisting gaps between the rich and the poor will be widened as new medical procedures and interventions are discovered that, at least initially, are only available to those whose insurance covers them or who can independently pay for these procedures. For example, Shapiro (1999) pointed out that it is likely that the distribution of genetic enhancement therapy through commercial markets will make these interventions initially available only to the wealthy. As a result, social and political disparity between the rich and the poor will be widened in the absence of targeted subsidies for the poor.

However, we need not look to the future utilization of genetic therapy to see how medical interventions may widen gaps. According to the Current Population Survey of the U.S. Census Bureau, 22.5% (in 2000) and 21.3% (in 2001) of poor children were without health insurance coverage, many without Medicare or any other form of subsidization. These rates are twice those for all children (11.9% and 11.7% in 2000 and 2001, respectively). This would appear to indicate that not only do noncovered medical interventions (e.g., genetic therapy) have the potential to increase disparity but that even what are fast becoming ordinary interventions (e.g., immunotherapies, routine medical screenings) may increase differences in health outcomes for rich and poor children. This conclusion is supported by data reported in the Vital and Health Statistics

collected by the U.S. Department of Health and Human Services (Blackwell & Tonthat, 2003). In their "Summary Health Statistics for U.S. Children: National Health Interview Survey, 1999," Blackwell and Tonthat reported that (a) 2 million children (3%) were unable to get needed medical care because the family could not afford it, and medical care for 2.7 million children (4%) was delayed because of worry about the cost; and (b) children in poor and near-poor families were more likely to be uninsured and to have unmet medical needs, delayed care, no usual place of medical care, and higher use of emergency room service than children in families that were not poor.

In terms of the other end of the age spectrum, recent bills passed by the House and Senate (H.R. 1 and S. 1, respectively) regarding prescription drug privileges by Medicare have raised concerns that this legislation may widen existing health-care-related gaps between the rich and poor elderly. For example, the National Committee to Preserve Social Security and Medicare (2004) has noted that the new plan includes what they term a "doughnut hole," or a gap during which seniors are required to pay 100% of their premiums without receiving any help from Medicare to cover the cost of their medication. This would clearly prove disadvantageous for individuals who are unable to cover the costs of medication within the proposed levels of coverage and who do not receive federal assistance that would qualify them for reductions in, or elimination of, premiums, copayments, and deductibles. These fiscal issues could therefore undermine the intended universality of the Medicare program.¹ Consequently, increased disparity will result between those older individuals who will be able to take maximal advantage of the new plan and those whose financial or health status will prevent them from enjoying the same benefits.

Thus, interventions in the biological/medical domain pose questions similar to those we have been raising about cognitive, social, and economic programs—namely, if interventions are made universally available, then in some instances they will amplify preexisting disparities because higher functioning groups will utilize them to a greater extent.

Part 2: Some Salient Considerations

So far, we have shown that it is not uncommon for universally available interventions to actually widen preexisting gaps between advantaged and disadvantaged groups as a result of greater utilization or greater performance benefits, and we have suggested that if many currently targeted interventions (i.e., those that have been means tested for lower performing students) were similarly made universally available, they, too, would contribute to gap widening because higher functioning students would make disproportionate performance gains or utilize them more fully. It bears noting again that our list of examples was not intended to be exhaustive, as our goal was merely to document that gap widening is a possibility in many different domains of intervention.

The purpose of the examples we have provided was to present a problem that policymakers and academics may

not be aware of and to present a possibility that this problem, albeit fraught with controversy, is one they *should* be aware of. Within each area, researchers have discussed the Matthew effect as a byproduct of initial differences in resources, ability, power differentials, poverty, and so forth, which spontaneously builds on itself (e.g., Dickens & Flynn, 2001). Accordingly, discussions have focused on how to best eliminate this seemingly problematic phenomenon. We raise the question here of whether society might sometimes be better served if this effect were induced by offering traditionally targeted interventions to nontargeted groups. Hence, our goal is not merely to document that gap widening occurs in different domains but to suggest that the ability to produce increased disparity among groups by universalizing some currently targeted interventions should invite serious discussion along political, moral, and economic lines. Presently, there is no coherent national policy governing cognitive, social, economic, and biological interventions; nowhere is there a discussion of whether scientific and educational efforts should be focused on precluding versus taking advantage of this naturally occurring phenomenon. In this concluding section, we delve into some of the policy ramifications of both sides of this argument.

Before doing so, however, we add one final caveat: The feasibility of detargeting some interventions is often constrained by resources. To take an example not previously described, Title I funds to poor schools could be shown to produce even greater gains among middle-class students if they were made available to them. But this would require a level of new funding, or a redistribution of existing funds, that would be politically unpopular. The same may be true of many other interventions that are potentially beneficial to advantaged individuals, such as universal tuition vouchers that are not means tested. It is one thing to make an intervention universally available when doing so is financially and politically feasible (social security is a paradigmatic example, as Medicare advocates oppose means-testing eligibility for Part B supplemental medical insurance on the grounds that it is contrary to the goal of universalization and thus will diminish popular support), but sometimes this is not possible. We imagine that, unlike the cognitive, social, and technological interventions, biological/health interventions would be seen by nearly all Americans as necessitating that any and all resources be made universally available to avoid precluding any child from a beneficial therapy. In the health disparities literature, the issue frequently is that both groups could gain equally if equivalent services were available for the disadvantaged. No such assumptions are made about the potential effects of cognitive, economic, and social interventions, as data indicate that such programs often widen preexisting gaps.

One aspect of the argument put forward here concerns the type of targeting of interventions. Specifically, what is the degree to which particular programs meet the needs of

¹ For a discussion of this issue, see www.ncpsm.org.

particular subgroups of children? Perhaps universal interventions widen the gap because they are directed toward the middle- or upper-level individual. In citing research that shows more gains by the haves from the same interventions, some might argue that these interventions cannot be considered the same because the have-nots live in worse neighborhoods, go to poorer schools, have lower health statuses, and so on. Such obstacles, however, do not preclude, at times, larger gains by the have-nots than the haves. One can imagine a universal intervention that helps disadvantaged more than advantaged individuals if it were designed with this aim in mind but universalized for political reasons (e.g., to increase support for it among middle- and upper-income voters/taxpayers). Indeed, some classroom social curricula may have greater impact on the more problematic children because of the low level at which the curriculum is targeted.

Likewise, one could imagine that some early child-care programs have more positive effects on the disadvantaged. For example, available evidence appears to support prekindergarten programs only for disadvantaged children; children of college-educated parents who participate in such programs do not appear to benefit more than matched peers who do not participate, probably because college-educated parents already provide equivalent resources to their children outside the confines of such programs (Ramey & Ramey, 1998). In the most fully specified model that strove to covary all relevant demographic and cultural variables (Magnuson, Ruhm, & Waldfogel, 2004), the results showed that prekindergarten programs had enduring positive effects only for the most disadvantaged children. In contrast, there are other policies (e.g., tax credits) that have a more positive impact on the middle class (as research indicates that they are more likely to take advantage of them).

Thus, any comprehensive discussion of the pros and cons of universalizing interventions must include a consideration of the type of intervention and its target audience. This leads to the suggestion that interventions will be most effective if they are both targeted *and* targeted to the right subgroups. So a child-care policy may not be optimal for children who already get enough cognitive stimulation at home, and programs for gifted children may not be optimal if directed toward children who do not have the requisite basic skills to profit.

There is an interesting related question having to do with whether, despite the gap-widening effect of some interventions, such interventions may nevertheless elevate the disadvantaged group above a threshold that permits them to accomplish developmental tasks that would otherwise be unattainable. For example, *Sesame Street* and early reading programs may elevate disadvantaged children to the point where they can read, even if these programs elevate advantaged children even more. If a child cannot read, the thrust of subsequent education would be impeded. If a child can read, he or she is at least in the same ballgame as more advantaged peers. To whatever extent this type of differential benefit allows poor children to take advantage of a larger matrix of interventions, it would require non-

linear analyses of the data to gauge threshold effects. Thus, while documenting that the rich get richer, the open question is whether the poor get better than they would otherwise if there were no intervention. Although some interventions increase the gap between children, what value should be placed on the fact that the lower-class children still do better than they otherwise might have done as a result of having received the intervention? It would seem that this is an important question for policymakers to address.

One can imagine from an ethical position a case being made that every student has an intrinsic right to have access to any intervention that is known to improve performance. Thus, one could argue that any intervention that elevates the performance of *any* student should be made available to that student, without regard to his or her financial needs, ethnic membership, aptitude level, or the social and political consequences of that student's elevation vis-à-vis lower functioning peers. However, when funding is so limited that the intervention cannot be made universally available, then hard decisions have to be made as to whether the program should be targeted exclusively to those most in need.

From a political and economic standpoint, a similar argument can be made in favor of universal exposure to interventions that are known to be beneficial. A nation's next generation of leaders, scientists, writers, engineers, and so forth, is drawn overwhelmingly from the top 10% of its population of students (Kingston & Lewise, 1990). So if a nation's standing with its international trading partners is dependent on the performance of its top echelon of scholars, engineers, and business leaders, then any intervention that raises the performance of these top students will serve to make that country more competitive. This is essentially the argument that economists and policymakers have used to bemoan the relatively poor performance of the top American students on international achievement tests:

There are startling gaps in the best students' knowledge when they are compared to students from other countries. In international comparisons of the top 10% and top 25% of students—this group is considered the raw material for the next generation of political leaders, science and engineering elite, and business managers—American students tend to be nearer the achievement levels of Italy and Thailand in such comparisons than to Japan, Sweden, and England. (Bronfenbrenner, McClelland, Wethington, Moen, & Ceci, 1996, p. 200)

Further, the enhancement of higher performing students *could* have a positive impact on everyone, as national economic growth stemming from their success could trickle down and provide much-needed economic resources for their lower performing counterparts. Thus, making interventions available to all students may be expected to elevate more of a nation's top students into the level considered critical for that nation's future economic success—despite the possibility that any gaps existing between that nation's haves and have-nots may be widened as a result of universalizing the intervention. This is more than an "academic" matter; top students in the United States lag significantly behind the top students of major U.S. trading

partners. According to a Third International Mathematics and Science Study (TIMSS) 12th-grade report by the U.S. Department of Education (1998),

in the general knowledge assessments, the students scoring at the 95th percentile in the U.S. consistently have scores that are below those at the 95th percentile in most of the other countries. Furthermore, in the mathematics general knowledge assessment, the scores of U.S. students at the 95th percentile are comparable to students at the 75th percentile in some of the high scoring countries. In other words, the 5 percent of our students score about as well as the best 25 percent of students in those other countries. In the physics and advanced mathematics assessments, a comparison of the fourteen percent of U.S. students taking advanced courses to comparable proportions of advanced students in the other countries shows that our students perform poorly. Our most advanced students, defined as the 5 percent taking AP calculus and the 1 percent taking AP physics, score about as well as 10–20 percent of the most advanced students in the other countries.

Hence, concern over bringing the top U.S. students into line with students from countries who are international partners of the United States argues in favor of universalizing cognitive interventions that can elevate the top U.S. group, even if this results in gap widening. One can, however, well imagine an argument that the narrowing of gaps associated with demographic factors is just as critically important for a nation's future success, or that raising the bottom group's level of attainment has a greater cost-benefit ratio or economic "return" than does elevating the top group's level (e.g., by reducing future welfare dependency, teenage pregnancy, criminality, etc.). This has led Carniero and Heckman (2002) to assert that "it is important to target the interventions toward the constrained. Broad-based policies generate dead weight" (p. 22). We take no position on this claim except to note that economic returns to schooling investments appear, if anything, to be greater for students from more advantaged backgrounds and/or from higher cognitive aptitude groups (Carniero & Heckman, 2002). To the extent that this is the case, interventions that are more targeted and constrained would appear appropriate, even if this strategy results in fewer of the nation's students being considered in the elite category that fuels tomorrow's business and science leaders.

From a psychobiological perspective, variability in a trait is highly common—almost inevitable. Although over the years social scientists have argued for the need to reduce individual differences, particularly at the lower end of the distribution, this has not led to notably successful strategies, nor might it always be a sensible goal. Often biology functions in such a manner as to make it likely that there will be a considerable spread on a trait unless deliberate steps are taken to constrain those at the top of the distribution. To some, it would seem a very peculiar thing to want to do. Take height as an example. There has been a very substantial increase in the average height of populations over the last century because of better nutrition. Notwithstanding this large increase in average height, however, the spread of height is much the same as it was 100 years ago. It is simply that the whole distribution has shifted upward. If there had been deliberate malnourish-

ment of taller children this spread could have been reduced, but it is very difficult to think of any argument that would make that seem a sensible goal. To some, a similar argument would apply to most traits that have strongly biological sources of variability.

From a social justice perspective, there is an intermediate position that, although recognizing the value of universal interventions, acknowledges that group differences in various important outcomes such as college graduation rates and earnings during adulthood are driven largely by gaps in academic achievement between the haves and have-nots. Thus, any intervention that increases the top group's achievement will result in their guaranteed salary advantage throughout their lifetime. In their analysis, Jencks and Phillips (1998) made this point:

Cognitive skills explain the entire black-white gap in college graduation rates, and they also seem to account for most of earnings gap between blacks and whites, especially among women. . . . Cognitive skills are only one of the many factors that influence earnings. But blacks and whites are far more alike on the noncognitive determinants of earnings than on cognitive skills. . . . As a result, cognitive skills explain a large percentage of the earnings differences between blacks and whites even though they explain only a small percentage of the variation in earnings among individuals of the same race. (p. 71)

Although policy experts like Jencks and Phillips believe that there exist potent correlates of economic success in the United States other than being a top student (e.g., access to networks), in the context of our article, they clearly believe that gap closing in earnings, college graduation rates, and so forth, will depend on gap closing in academic achievement. Thus, gap closing takes on a social justice dimension because universalizing interventions could lead to gap widening and hence to even larger gaps among the haves and have-nots in terms of income, college education, and so forth.

Finally, as with the social justice position described previously, one could argue for targeting interventions on ethical grounds. For example, it might be suggested that as a nation we have an ethical obligation to raise the level of lower performing children because their position in the lower group is often a function of external conditions over which they have no control and is not the result of internal cognitive differences (e.g., academic achievement is confounded with SES/race/school resources). If true, society should take every opportunity to equate these external differences, even if this means restricting access to potentially beneficial interventions (if this could not be done in a manner that was beneficial to both groups), so that every student is given an opportunity to make it into the top 10% and partake in the spoils that come with this. Moreover, from a practical perspective, just as a nation does not want to rob itself of creating the best scientific, management, and engineering elite among its higher functioning group, it would likewise not want to lose out on many potential leaders, scientists, and so forth, whose talent may be not be realized because of external constraints.

Part 3: Is There a Guiding Political Philosophy to Help Address This Issue?

Finally, we ask whether America has a consensual political philosophy to help guide the discussion of interventions described here, particularly when resources must be parsed to favor either the haves or have-nots. From its beginnings, America has been of two “minds” about the role of individual differences and the inevitability of their expression. In his acclaimed history of the events surrounding the U.S. Declaration of Independence, McCullough (2001) documented through the letters of the framers of the Constitution that serious disagreement existed on this issue. John Adams, Thomas Jefferson, and Benjamin Franklin all expressed the belief that men were not created equal, despite the wording of the text in the Declaration of Independence:

The [Constitutional] convention revised the first article of the Declaration of Rights, that all men were “born equally free,” to read that all men were “born free and equal,” a change Adams did not like and would like even less as time went on. He did not believe all men were equal. (McCullough, 2001, p. 224)

As noted, Jefferson, Franklin, and others shared Adams’s view that differences among people were ineluctable, a view at odds with some of their contemporaries. Undoubtedly, 21st-century American political thought embodies the same disagreements and their ramifications for interventions. If individuals were truly born with equal talents, dispositions, and attitudes, then potential environmental disadvantage would be easier to offset by carefully targeted interventions for which there might be political will to finance.

A 20th-century update on John Adams’s view of social inequality was aptly expressed by Tawney (1952) a half century ago when he argued that

while . . . natural endowments differ profoundly, it is the mark of a civilised society to aim at eliminating such inequalities as have their own source, not in individual differences, but in its own organisation. . . . Individual differences that are the source of social energy are more likely to ripen and find expression if social inequalities are, as far as practical, diminished. (p. 49)

For Tawney and adherents of his position today, the goal of an enlightened nation’s policies should be to remove impediments rather than reduce the spread of individual differences. (As is the case in the present article, his concern was with reducing impediments that arose from circumstances external to the individual.) However, his argument is also applicable to impediments that arise from sources of variance having their root within the individual. Thus, for example, eyeglasses are available to those with myopia, special education is available to those with learning difficulties, hip replacements are available to those who develop severe arthritis. In an ideal world, most people would wish for interventions of these kinds to be universally available to all who could benefit from them. Realistically, however, there is some form of rationing for those interventions that are particularly expensive. In those circum-

stances, society needs to pay attention to whether the particular form of rationing used is ethically acceptable and fair in its operation as well as economically and politically rational.

As far as impediments with sources external to the individual are concerned, it might well be argued that it is reasonable to provide special help or special services for those who would otherwise be handicapped, impaired, or disadvantaged as a result of their group membership (as a result of where they live, their ethnicity, social circumstances, institutional discrimination, etc.). The objective here, however, may not be to reduce inequalities in any general sense but rather to remove impediments that particularly apply to some groups but not to others—impediments to reaching a level of competence that one is capable of attaining. In such an analysis, we agree that clearly identifying the role of institutional discrimination and power differentials in producing differences between haves and have-nots becomes central in order to remedy roadblocks to utilizing interventions described earlier that may be the result of oppressive living conditions.

Conclusion

Undoubtedly, there is a mix of interventions, some targeted and some universal, that produces the best overall cost-benefit ratio for a nation on political, economic, and moral grounds. To some extent this is an empirical question, but the point of this article is to foster a national dialogue on the heretofore undiscussed social, political, ethical, and economic aspects of this issue. America has no national policy that (a) explicitly frames intervention programs in terms of consensual political philosophy that is mindful of both the need to elevate the top students and the need to redress past injustice, (b) acknowledges the types of outcomes that we have described here, and (c) considers what mix of interventions will best achieve national interests and values. In closing, we reiterate that we take no position on this debate but hope that our analysis is a first step in promoting a needed discussion of whether national policies should be aimed at raising the top students, bottom students, or both, and the political, moral, and economic ramifications associated with each of these options.

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