

The Abell Report

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Personalized Guns: Using Technology to Address Gun Violence

ABELL SALUTES: “Success for All”—After a decade’s absence, the program is back in the Baltimore school system.

For about 10 years, beginning in 1986, students in the Baltimore City Public School System (BCPSS) enjoyed significant benefits from the demonstrably effective program called Success for All. Then, lost in the tangled history of the system, the program was dropped. Now, for reasons Dr. Robert Slavin, chairman and founder, knows well and explains carefully, the program has returned—and there is good reason to welcome it back.

“Success for All,” he says, “is a full-school reform model, designed to try to make sure that kids don’t start the process of falling behind, that they are successful, particularly in reading, and really across the board. We use everything we know—in instruction, in curriculum, in parent involvement, in assessments—everything to try to make sure that the kids are going to be successful.”

The model contains no magic bullet, and is a mix of the familiar: small classes that engage students in active cooperative learning, one-to-one and small group tutoring, expanded reading, individual academic planning, resource support, frequent testing, and

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A comprehensive view of “smart guns” as related to public health, technologic history, law, politics, economics, and society.

By Stephen P. Teret, JD, MPH and Natalie A. Draisin

Personalized guns, sometimes called smart guns or childproof guns, are firearms designed to operate only for their authorized users. The technology for such guns has been developing for decades, and is now feasible and reliable, but personalized guns cannot yet be found in the American marketplace. Their lack of availability is occasioned by gun politics. Even though personalized guns would reduce the incidence of gun-related homicides, suicides, and unintended deaths, pro-gun forces resist the marketing of such guns. Policies and strategies based upon legislation, regulation, and litigation, as well as market forces, that will facilitate the coming availability of personalized guns are being explored.

Introduction

When Deputy Sheriff Daniel Fanning of Wilson County, Tennessee, was in his bedroom at a family gathering in April 2013, showing a relative his gun collection, he didn’t expect his 48-year-old wife, Josephine, to enter the room with their 4-year-old nephew. Nor did Deputy Fanning expect his nephew to grab one of the loaded guns on the bed and point it at Josephine, killing her with one shot.¹ Although this type of gun-related fatality is often called a ‘freak accident,’ it is a type of injury for which there is a known epidemiology

(as described herein), making it foreseeable, and therefore preventable.

Consider this scenario: You are at home preparing dinner for your family, while your children play in the living room. You are about to get the main course out of the oven when you hear an unmistakable gunshot—not from outside, but from inside your house. As you run into the living room, you see your 3-year-old daughter holding your gun, and your 2-year-old son, lifeless, bleeding from his stomach. An incident such as this was not a nightmare, but rather a nightmarish reality in Utah, in April 2014.² Could this be prevented?

Now imagine the same scenario. You take the main course out of the oven and walk by the living room to set the table. Out of the corner of your eye, you see your daughter’s hands wrapped around your gun, pointed at your son, and she is poised to pull the trigger. She mistakenly believes that it’s a toy, probably because it looks like one of her toys. A wave of terror throws you toward her, to grab the gun out of her small hands, but it’s too late—she has pulled the trigger. Only this time, the gun doesn’t shoot. This is not yet a reality in America, but it can be.

The gun in the imagined scenario, a personalized gun (sometimes called a childproof or smart gun), is one that will only work for an authorized user. It is

equipped with built-in technology that identifies you as the user, and ensures that your daughter cannot shoot your gun, a robber cannot shoot you with your gun, and a criminal who buys it on the black market cannot shoot a victim. It protects your right to bear arms, while protecting the rights of others to be free from violence.

Personalized guns could have prevented these family tragedies, and many others like them, as well as some homicides and suicides. In April 2014 alone, there were at least three other incidents like the true stories referenced above, turning children into accidental killers. In South Carolina, a 6-year-old boy shot a 22-year-old woman with a gun he had found in the car in which they were sitting. While in the backseat, he picked up the gun and shot through the back of the passenger's seat into her body. Also in South Carolina, a 5-year-old boy killed a 7-year-old girl at a birthday party, with a gun he thought was a toy. The bullet went through a car, fragments of which hit the young girl in the chest and killed her. And in Philadelphia, a 2-year-old boy was able to reach his mother's boyfriend's gun, which was left on top of the refrigerator, a place seemingly out of reach. He shot his 11-year-old sister, piercing her heart, and any sense of normalcy the family will ever have.³ Each of these scenarios could have been prevented.

There are many stories like these, of families being shattered by such tragedies. Of course, some individuals and entities, including the National Rifle Association (NRA), argue that educating gun-owning families about the need to act carefully in the presence of guns

could prevent such incidents.⁴ However, children are children, and they will act as such in spite of gun education.⁵ It is difficult for a child to differentiate between a toy gun and a real gun. Mistakes even occur among the trained, adult population. In Maryland in 2013, for example, a police trainer for firearm safety accidentally shot a police cadet in the head, mistaking a real, loaded gun for an unloaded paint pistol.⁶

The Need for Personalized Guns

Gun deaths are a global epidemic. Although the actual number of people killed around the world by guns is controversial, it is estimated to be upwards of hundreds of thousands,⁷ with the highest estimate being 315,600.⁸ In the United States alone, 32,351 people were killed by guns in 2011, the most recent year for which government data have been made available.⁹

However, this epidemic of gun deaths can be reduced. A study utilizing data from Maryland and Wisconsin found that personalized guns could have prevented 37 percent of unintentional gun deaths.¹⁰ Evidently and understandably, personalized guns will not prevent all gun deaths, but they will help address accidental gun deaths, youth suicides, and assaultive and homicidal shootings.¹¹ In the United States, for example, personalized guns could prevent many suicides by gunfire in children 19 and under. In 2011, 849 youths of the ages of 10 to 19 committed suicide with guns.¹² Some may argue that youths who are determined to commit suicide would find another means, but research shows this to be generally untrue.¹³

Additionally, it is important to note that once a youth has shot himself or herself, little can be done to save his or

her life, compared to a medical intervention that can occur when a youth, for example, overdoses on pills. There is an antidote for opioid overdoses, but there is no antidote for a gunshot wound to the head.

Assaultive and homicidal shootings will also decrease as the use of personalized guns increases. In the United States, there are 500,000 guns stolen each year during home burglaries.¹⁴ These guns then enter the illicit gun market by being sold to others, who often use them in violent crimes. But, the guns could not be operated by these unauthorized users if they were personalized, thereby reducing deaths occurring in gun crimes.

The History of Personalization Technology

Although there is heightened current interest in personalized guns, they are not a new concept. Recognizing the danger that can result when a gun falls into the hands of a child, the gun manufacturer Smith & Wesson created a childproof gun in the 1880s. That gun would not fire unless the grip safety, a metal lever on the rear of the gun, was depressed at the same time the trigger was pulled, a movement too difficult for the small hand of a child younger than 8 years old to perform.¹⁵ The public responded with interest, buying more than half a million of these guns between 1886 and 1940.¹⁶

Though Smith & Wesson stopped producing the gun, the concept of a safer gun lived on. Mechanical (non-electronic) personalization followed in the latter half of the 20th century, when a three-wheel combination lock was incorporated into guns made by the Tri-C Corporation of Meriden, Connecticut.¹⁷ Only an individual knowing the combination to the lock could use the gun,

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rendering it personalized. Another company, Taurus International, introduced a lock-and-key safety device on its revolvers, pistols, and rifles.¹⁸

The 1990s brought significant progress in the development of more highly technological gun personalization. Personalization was experimented with in the form of radio frequency identification (RFID), touch memory, and biometrics such as fingerprint-reading technologies. The technologies required further development,¹⁹ which occurred after the turn of the century. In 2000, recognizing the importance of investing in personalized gun technology, the National Institute of Justice of the U.S. Justice Department provided two \$300,000 grants to Smith & Wesson and FN Manufacturing. The grants were intended to “support the design and testing of smart gun prototypes as well as additional research into specific technologies, including fingerprint identification and embedded microelectronics, to prevent firing by unauthorized users.”²⁰ Smith & Wesson made progress in its research and development of a personalized gun, to the point where it offered to produce a childproof handgun if the company would be released from lawsuits then pending against it. These lawsuits had been brought by municipalities seeking to recover the costs to the public from gun injuries. Smith & Wesson’s offer to make a safer gun infuriated some pro-gun forces, and a boycott of Smith & Wesson’s products was put in place, which caused serious financial damage to the company. The damage done to Smith & Wesson still resonates among gun manufacturers as a warning not to break ranks by making a safer gun.

In 2002, iGun Technology, a subsidiary of the Mossberg Technology Group, developed a personalized carbine, or long gun. The gun would only fire if the user wore a special ring that was in

close range to the gun. As the company described, “When the iGun senses that the ring is near enough, it compares a unique code (billions of combinations) from the ring to the gun to see if there is a match. If the code matches and certain other conditions are met, an electric current from the battery bank actuates a mechanism to unblock the trigger.”²¹

The iGun technology used RFID ‘tags,’ or objects containing tiny electromagnetic transmitters, and ‘readers,’ which detect the presence of tags. We see this technology in our everyday lives in the United States, from library-book theft prevention, to vehicle parking access and controlled building access.²² To prevent unauthorized gun use, RFID uses tags that can be embedded in a wristwatch, ring, or bracelet worn by the user, so the reader, or gun, can detect the proximity of the tag and permit gun use. If the tag, such as a wristwatch, is not close enough to the reader, often located in the grip of a handgun, a small blocking mechanism will prevent the gun from firing.

Current Personalization Technology

Currently, an Irish company, TriggerSmart™, is developing guns with RFID technology. Its personalized pistols will come with an RFID-equipped bracelet, which must be worn by the user in order for the gun to fire. An antenna, electronic interface, and battery in the grip of the gun will place the gun in ‘instant-on’ mode so the gun can be fired, once the bracelet is within an appropriate distance.²³

Armatix, a German company, now manufactures a .22 calibre pistol, the iP1, which allows the consumer to choose between digital or battery operation.²⁴ A wristwatch, the iW1, emits the radio frequency necessary for the gun to operate. Providing further safety features, the wristwatch requires the user to enter a personal identification number (PIN) to unlock the electromechanical firing

pin lock. The gun lights up with different colors to alert the user as to whether or not the wristwatch is close enough for the gun to fire. A green light indicates that the user and the wristwatch are in range and the gun can fire, while a red light shows that they are not, and the gun will not fire. A blue light indicates that the gun is in ‘safe mode,’ meaning the gun’s magazine has been removed rendering it inoperable. Armatix is interested in licensing its technology to other gun makers.²⁵

Guns can be retrofitted to read fingerprints, for those who prefer biometric means of personalizing their current handguns. Kodiak Industries (also referred to as Kodiak Arms) of Salt Lake City, Utah, is ready to mass market such a product. The company simply replaces the grip of a handgun with another grip that can be programmed to recognize the fingerprints of up to 20 different people.²⁶

Safe Gun Technology is developing a similar product, and asserts the benefits of fingerprint-reading technology over RFID technology. The company argues that RFID tags such as a wristwatch or bracelet can get lost, whereas fingerprint technology is built into the gun, and even allows a user to quickly add or delete additional users.²⁷

Palm recognition, which recognizes the palm configuration of a user, can be used as an alternative to fingerprint recognition. The New Jersey Institute of Technology has been working on such technology for several years.

The cost of personalized guns is yet to be determined, and will depend upon the technology used by the manufacturer. Some have estimated an increase in cost in the range of 10 percent to 15 percent that will be achieved once these guns are widely available and economies of scale come into play.

Overcoming Opposition to Personalized Guns

Personalized guns provide life-saving and cost-saving potential, by not only

avoiding tragedies, but also by avoiding the health-care costs of treating victims and their families. In 2000, Cook and Ludwig²⁸ estimated that the direct and indirect costs of gun violence in the United States are about \$100 billion per year. Despite the promised benefits of personalized guns, they historically have faced significant opposition. Therefore, advocates for personalized guns have turned to legislation, regulation, and litigation as tools for introducing personalized guns into the marketplace.

In 1997, Massachusetts Attorney General Scott Harshbarger promulgated regulations requiring all new handguns sold in the Commonwealth of Massachusetts to be childproof. Some of these regulations were adopted into statutory law. They did not require personalization technology *per se*, only that the handgun must be inoperable by a young child. Therefore, the 1880s Smith & Wesson childproof design could have satisfied the regulatory and statutory requirements for childproofing. This design would not prevent other unauthorized users from operating the gun. California passed a somewhat similar law in 1999, but also did not mandate personalization.²⁹

A model law mandating personalized guns was developed by the Johns Hopkins University's Center for Gun Policy and Research in 1998, published as "A Model Handgun Safety Standard Act."³⁰ It suggested that states and localities establish a performance standard requiring that all handguns sold in that jurisdiction be equipped with personalization technology. A variation of the model law was passed by New Jersey in 2002, establishing that once a personalized gun, recognized by the State Attorney General as meeting the statutory definition of a personalized or childproof gun, is available for sale anywhere in the country, all new handguns sold in New Jersey three years thereafter

must be personalized.³¹

A similar bill was introduced in the California legislature requiring that all handguns sold must also be owner-authorized (or personalized) 18 months after the California Attorney General reports that the first personalized gun is available for sale.³² After being voted upon favorably in the Senate, the bill was held in the Assembly at the close of the 2014 legislative session for further consideration.

On the national level, bills have been introduced mandating that some guns be personalized or childproof, but they have yet to be enacted into law. Rep. Bill Pascrell (D-NJ) introduced such a bill in June 1999, H.R. 2025, which would have banned the manufacture of nonpersonalized handguns. More recently, Rep. John Tierney (D-MA) introduced the Personalized Handgun Safety Act, H.R. 2005, and Sen. Edward Markey (D-MA) introduced a similar Handgun Trigger Safety Act of 2014, S. 2068, calling for the personalization of all new handguns.³³

One might suppose that, at the federal level, a regulatory approach to mandating the design of safer guns could be accomplished through the Consumer Product Safety Commission (CPSC). This avenue, however, was blocked by Congress when, in 1976, at the bidding of the NRA, Congress forbade the CPSC from exercising any jurisdiction over guns.³⁴ Thus, while we as a nation regulate most other products for safety purposes, such as making medicine bottles childproof to protect the well being of children, we do not regulate handguns, allowing them to be operable by young children, with foreseeable and disastrous results.

An alternative to the challenging route of legislation would be to raise the specter of litigation against gun manufacturers—litigation that would deem them negligent for not producing personalized guns, if the weapon created injury. This approach was successful in

enhancing automotive safety, by transferring the costs of avoidable injuries to the car makers, thus giving them the financial incentive to make safer products. Considerable thought was given to the application of this strategy to gun safety.³⁵ For example, a child who was unintentionally shot by another child might sue the gun maker for failing to produce an adequately safe product.³⁶ This could have been a viable strategy had the U.S. Congress not passed the Protection of Lawful Commerce in Arms Act of 2005, which provides extensive immunity to gun makers from lawsuits claiming a defect in the design of the gun.³⁷

Current Social and Political Developments

There exist several arguments for and against personalized guns (see Figure), and not surprisingly, many of the arguments in favor of such guns have been expressed by those in favor of broader policies to reduce gun violence (i.e., proponents of what is generally known as "Gun Control"). The arguments against personalized guns have come, mainly, from pro-gun organizations and enthusiasts who strongly disfavor "Gun Control." But, interestingly, the arguments are not wholly restricted to "party lines" within gun politics. For example, among the most ardent supporters of policies to reduce gun violence is the Washington, D.C.-based Violence Policy Center, which opposes the promotion of personalized guns.³⁸ Its opinion, represented by quadrant 2 of the Figure, however, is the minority opinion among those committed to gun-violence prevention.

Those who occupy the quadrant labeled 1 on the Figure believe that the introduction of personalized guns into the marketplace will, overall, reduce the incidence of gun-related morbidity and mortality, and that the technologies for personalized guns are now developed enough to warrant the sale of these

guns. But a difference of opinion exists among those who occupy quadrant 1 as to whether the sale of personalized guns should be mandated by federal and/or state law as opposed to letting market forces govern the sale of such guns. With regard to possible mandates, there is a further division of opinion. Some prefer a legislative mandate that personalized guns be the only new handguns that may legally be sold, while others argue for a legislative mandate that licensed dealers selling new handguns must include personalized guns among their inventory of guns for sale, along with nonpersonalized guns.

Those who favor the sale of personalized guns but who disfavor any mandate (i.e., the market forces advocates) believe that gun buyers will want more technologically sophisticated firearms, and that gun makers who meet that demand will prosper more than gun makers who limit their product line to guns with the same design as those made more than a century ago.

Quadrant 4 of the Figure describes strong pro-gun and Second Amendment advocates, who also disfavor the idea of

making personalized guns available to the public. Among those who occupy this quadrant are the NRA and the National Shooting Sports Foundation (NSSF), the trade association of gun manufacturing companies in the United States. Although both the NRA and the NSSF occasionally profess to having no reservations about personalized guns *per se*, objecting only to legislative mandates for such guns, their comments are uniformly deprecating of these guns. They say that the technology is untrustworthy and that the introduction of smart guns into the market will inevitably lead to a mandate.^{39,40}

Armatix, the German company with a U.S. affiliate ready to sell its smart gun, recently arranged with two retail dealers (one in California and the other in Maryland) to offer its gun for sale. This created a maelstrom of controversy, coming largely from the NRA and NSSF. On the face of the issue, the NRA and NSSF opposed the sale of the Armatix personalized gun because it would trigger the New Jersey law, which provides that once a personalized gun is sold anywhere in the United States, then after a three-year period, the only new handguns that could legally be sold in

New Jersey would be personalized guns.

There is recognition on the part of the NRA and NSSF that U.S. gun makers have failed to engage in research and development for many decades, but are currently doing quite well financially by selling guns that were designed more than a century ago. When personalized guns enter the market, U.S. firms will be at a keen disadvantage compared to more technologically sophisticated European firms, and will be faced with the costs of purchasing licenses for the new technologies and retooling. Thus, the NRA and NSSF vigorously oppose anything and everything that will soon make the purchase of personalized guns by gun enthusiasts possible.

When the two California and Maryland gun retailers agreed to sell the Armatix personalized gun, both received so many death threats and threats to their businesses that they immediately backed off their pledges to sell the gun. Most of the threats were due to the fact that the sale would trigger the New Jersey law—perceived by some pro-gun forces as pushing them out onto a slippery slope that would result in more widespread gun regulation. The response of the Maryland dealer to the threats against him was to explain to the media that he was merely trying to make all guns available for purchase. He further stated that, in his opinion, the opposition of the NRA to the sale of personalized guns was hypocritical, in that the Second Amendment gives most individuals the right to buy most guns.⁴¹ The point of view expressed by the Maryland gun dealer and those who support him is found in quadrant 3 of the Figure. Previously, this was a position not taken up by many, but it now appears that some gun enthusiasts and Second Amendment supporters might move from quadrant 4 of the Figure into quadrant 3, supporting the sale of personalized guns.

The New Jersey law, which once was seen as strong policy advancement

Arguments for and Against Personalized Guns

		Personalized Guns	
		Favor	Oppose
"Gun Control"	Oppose	<ul style="list-style-type: none"> • Reductions in homicides, suicides, and unintended deaths. • Technology now exists. • Doesn't interfere with 2nd Amendment rights. • All consumer products should be as safe as feasible. 	<ul style="list-style-type: none"> • Might increase prevalence of households with guns. And, therefore, gun-related injuries.
	Favor	<ul style="list-style-type: none"> • All guns should be available to most of the American public. • Some who would not have bought a gun that they perceived as being unsafe will buy personalized guns. 	<ul style="list-style-type: none"> • Technology is unreliable. • Such guns will lead to a mandate disallowing the sale of other guns.

for the field of gun-violence prevention, has ironically become an impediment to getting personalized guns on the market. Because of this, New Jersey State Senator Loretta Weinberg, a strong proponent of the law when it was passed a dozen years ago, stated publicly that she would work to repeal the law if the NRA would stand down from its position of opposing the sale of personalized guns.

This offer put the NRA in a very difficult position. While it has always loathed the New Jersey law and now has the chance to see the law repealed, the NRA cannot allow itself to be seen as compromising on the issue. The NRA has thus far refused to respond to the offer.

All of this has led to increased media attention to the personalized gun debate, and has grown the ranks of gun-violence prevention advocates.

Next Steps

The technology to personalize guns has advanced significantly in the past two decades, but further advances can and should no doubt be made. To incentivize those advances, some wealthy individuals have created a not-for-profit organization, the Smart Tech Challenges Foundation, the mission of which is to “speed up the discovery of innovative technologies to make America safer without encroaching upon our Second Amendment rights.”⁴² The first contest of the Smart Tech Challenges Foundation involved \$1 million in prize money that was awarded to applicants who offered the most promising ideas for improvements in gun personalization technology. More than 200 applications were received, dealing with a wide range of ideas, and 15 applicants were selected as award winners. The expectation is that the result of these awards will be a variety of personalized gun technologies soon appearing in the marketplace.

As personalized guns first become available for purchase, it is essential

that there exist buyers for them, thereby incentivizing more gun manufacturers to convert their production from old-style guns to safer guns. A significant portion of gun purchases in the United States are made by federal, state, and local law enforcement agencies, and these agencies need to be educated and encouraged to switch to personalized guns. The process to harness the purchasing power of law enforcement agencies is now underway.

Lastly, once personalized guns begin to replace old-style guns as the firearm of choice for home protection, well-designed evaluations of the consequences of this change need to take place. For these studies to be feasible, data on the types of guns involved in suicides, homicides, and unintended gun deaths need to be readily and reliably available throughout the United States. The federal Centers for Disease Control and Prevention (CDC) should invest in both the data collection system and the analytic studies needed to assess the results of the advent of personalized guns.

Legislation at both the federal and state levels could facilitate the occurrence of these next steps. For example, Congress could do the following:

- Allocate additional funds to the CDC that are earmarked for the purposes of enhancing CDC’s gun-violence data collection system, and evaluating the effects of new strategies to reduce gun violence.
- Amend the Protection of Lawful Commerce in Arms Act, so that injuries that would have been prevented had a gun been personalized are compensable by litigating against a gun manufacturer that does not offer personalized guns in its product lines.
- Direct the federal agencies that purchase guns to preferentially buy smart guns, and allocate funds to the agencies for these purchases.
- Give the Consumer Product Safety Commission jurisdiction to regulate

the design of guns in the same way it regulates the safety of other consumer products.

- Provide financial incentives to states to pass laws requiring that all new firearms employ personalization technologies.

States can consider similar legislation regarding the mandate and purchase of personalized guns.

Conclusion

Given the maturation of gun personalization technology, the growing social and political interest in having such guns available for purchase to reduce the incidence of gun deaths, and the possibility that some traditionally pro-gun advocates may break with the NRA’s opposition to personalized guns, it now seems likely that there will be a change in the design of guns. If guns become generally viewed as consumer products that can be designed as safer products, without interfering with the Constitutional rights of those wanting to possess guns, then a long-awaited public health benefit will be realized in the reduction of gun-related morbidity and mortality.

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About the Authors

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ABELL SALUTES

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home-school collaboration. Its success is in the sum of its parts.

Success for All is now implemented in 46 states. "In the BCPSS today," says Dr. Slavin, "we are in 21 schools, but by the late 90s, the program was no longer functioning in Baltimore City. Various superintendents had other plans and so we took the program to other states. Although we—our group at the Johns Hopkins' Center for Social Organization, later changed to the Center for Research and Reform in Education—managed to hang on, it was clear the goals we originally had in mind would be difficult to accomplish in Baltimore. So we started to offer Success for All elsewhere—Philadelphia, Alabama, and other states.

"We are now coming back in the Baltimore City public schools in a big way."

The Return of Success for All

The reinstalling of Success for All back into Baltimore City public schools has its genesis in Henderson-Hopkins, a K-8 school operated by the Johns Hopkins University School of Education, in partnership with Morgan State University's School of Education and Urban Studies. (The school is officially a contract school of the Baltimore

City Public School System.)

"In 2010, Henderson-Hopkins brought Success for All back into that one school," recalls Dr. Slavin. "Commodore John Rodgers decided independently to adopt Success for All the same year. Words started getting around, and three other schools—Margaret Brent, Steuart Hill, and Dr. Rayner Browne—adopted the next year. At this point, district staff noted the success that schools were having, how effective Success for All was proving to be, and then they thought, well, this is a program we can use for other schools."

In an initiative led by chief academic officer Sonia Santilises, BCPSS then offered the program to 26 additional schools, with the attractive arrangement that the system itself would pay for operating the program.

Success for All was selected by the Baltimore City Public School System not because it is promising but because it is proven to be predictably successful. According to Dr. Slavin: "Many studies of Success for All have been done, starting in Baltimore and then all over the country, going back to its first five years, including testing at Abbottson and four other elementary schools. We looked at gains in those schools and compared them with gains in five matched schools. Every grade showed the positive

difference that Success for All was making, and by the end of the fifth grade, the tests, cumulatively, showed that the students had gained the equivalent of a whole grade. So by the fifth grade, Success for All students were a whole year ahead in reading."

Equally important is the finding made by a group from the University of Wisconsin. It followed students through the eighth grade of middle school, and found that at that level, not only were the students still scoring substantially above their grade level, but among them, assignments to special education were cut in half, and the number of failures was reduced by 50 percent.

Money to support Success for All in Baltimore comes from the federal Title One program. As that money filters down, each school then makes its choice of how best to put that money to work. A grant from Investing in Innovation, a U.S. Department of Education program, also provided funds for professional development to get schools started.

The Abell Foundation salutes the Baltimore City Public School System, for reinstalling the designed-in-Baltimore and now nationally renowned Success for All program—and for recognizing the success of Success for All, then and now.