An Interview with Jim Flynn about the Flynn Effect

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(Interviewed on behalf of North American Journal of Psychology by)
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James R. Flynn is Professor Emeritus at the University of Otago. His university awarded him an Honorary Doctorate and its Gold Medal for Distinguished Career Research. He has been profiled in *Scientific American* and named "Distinguished Contributor" by the International Society for Intelligence Research. The "Flynn effect" refers to the documentation of massive IQ gains from one generation to another. His book, What is Intelligence?, lays the foundation for a new theory of intelligence.

NAJP: What are you currently working on, researching?

JF: Currently, I'm working on a paper that has to do with the deceptiveness of convenience samples, particularly elite samples. People often, since they're handy, test their own students at university or even in their own psychology classes, and then they generalize from these to the general population. For example, they may find that among university students the male IQ is two or three points above the female, and, while they put in disclaimers, they imply that this tells us something about the general population. But, in point of fact, of course, if you look at a normal curve, and you assume—which I think is true—that women have a slightly lower IQ threshold to entering university, then the gender parity in the general population would generate a two or three point IQ advantage for males at university.

You know, the lower the threshold, the more low IQ women would get in. I think that women with an IQ of 100 are much more likely to get A's and B's than men with an IQ of 100 at secondary school. There's a lot of evidence to that effect. So that means that the female university

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sample is less elite, and that, of course, lowers the mean IQ. It also would raise the SD because, of course, you're covering a wider part of the curve, so one of the symptoms that you're getting an unrepresentative sample would be that women score two or three points below men but have a larger standard deviation within university students; and that's indeed what you find.

There are a lot of other examples of this: where people just don't take into account that these elite samples of university students are deceptive about the general population.

Other than that, I'm working on stuff that shows that, as we age, people of high IQ pay a "bright tax." That is, if you have a high IQ, after sixty-five, your analytic abilities and processing speed will deteriorate faster than someone of average or low IQ. On the other hand, for your vocabulary, you get a bonus; it will hold up much better. This, I think, is a novel finding. People tend to lump all these together. But, if you analyze the latest data, you'll find that the evidence is that if you're bright, you'll have a faster downward curve to your analytic and information processing abilities, and you'll find that at the mean or below the mean the drop is less.

Finally, I'm doing a paper where I compare the vocabulary gains over time of school children and adults. You find that while school children have made very little gain in the last fifty years, adults have gained over a standard deviation for their active vocabulary. For passive vocabulary, there hasn't been the same trend. So the implication is that, when you talk to your teenage children today, they can understand you as well as kids could in 1950, but they cannot actually use your adult vocabulary nearly as well. I presume that the teen-speak of teenage subculture insulates them from being socialized into their normal speech community. You know, these are bits and pieces. You have to remember, I'm not primarily a psychologist; I mean, that's the work I'm doing in psychology but the books I'm publishing at present are on philosophy, on why students should read world literature, and things of that sort, and about American foreign policy. Here I have focused on my psych research. I'm actually doing research in my own bailiwick as well, and the books I'm publishing are mainly in that area.

NAJP: Can you give us your definition of the Flynn effect?

JF: Well, the Flynn effect is quite simple; that is, if you compare people today of eighteen years of age with people who were eighteen-years-old ten, twenty, thirty, forty, fifty years ago, the present eighteen-year-olds will get much higher scores on IQ tests, depending on the test, of course. If it's Raven's progressive matrices, during the twentieth century, they

got much, much higher scores. If it was Wechsler performance, they got much higher scores; Wechsler verbal, less so. That's more true for school children than adults I've recently discovered that for adults, the gap between performance and verbal IQ gains is much less. I think that's because many more adults today have a university education than they had fifty years ago, so that's bumped up their crystallized intelligence—you know, their level of vocabulary and general information. While when you're testing, let's say, thirteen-year-olds, they've had no more years of schooling today than they did thirty, forty years ago.

NAJP: Are you familiar with the Matthew effect?

JF: I'm familiar with it in the sense that it resembles what the Dickens-Flynn model shows (Dickens & Flynn, 2001). And that is that children can be born with a very small advantage over the average in terms of superior genes impacting on their brain physiology, and, as they gain autonomy as they get older, they turn that slight performance advantage due to genes into an escalating one due to matching increasing superior environments. Take basketball. Kids who're born only a little taller and quicker than average will perhaps enjoy playground basketball more and play more, so already they're upgrading their environment in terms of enriched basketball practice. And then, when they get to school, the grade school coach may see them and say "Hey, they're worth putting on the team." And that, of course, upgrades their performance advantage more, and then they may make their high school team and get really good coaching. So the Dickens-Flynn model predicts that small genetic advantages can turn into large performance advantages through these feedback loops. We use this to explain a puzzle in literature, and that is, how is it that genes are so dominant in explaining individual differences in IQ, while IQ gains over time show huge environmental influences at work? That seemed to set up a dilemma; how could environment be so weak in inheritability or twin studies that show identical twins with virtually the same IQs, and yet how could environment be so potent in IQ gains over time? The answer is that genes gain dominance within cohorts because the kids with the better genes add powerful environmental advantages to their genetic advantage. So the influence of environment is there, but it's co-opted by genes. Between generations, there's hardly any genetic upgrading at all. So between generations, the powerful forces of environment are cut loose and manifest themselves in their full potency.

NAJP: In your mind, what should be the main components or subtests of an intelligence test?

JF: I think the Wechsler tests are very good for their purpose, and that is predicting academic performance at school. My major problem with them is that in their desire to make the subtests accord more with the components of intelligence produced by factor analysis, they're in danger of dropping subtests that are terribly important. For example, the arithmetic subtest is being sidelined. Now that gave us a wonderful record of the arithmetical reasoning ability of American school children, all the way from 1948 to 2002, and when you drop a test of that sort or make it an optional test, you are in danger of losing a tremendous amount of information about historical trends. The other reservation I have is in classifying kids as mentally retarded.

I think that what they should do is find which items on the Wechsler test correlate with, let's say, the Vineland test, which is supposed to test people's ability to cope with everyday life, and those items on the Wechsler test should probably be used as a special test for mental retardation. At present, the Wechsler test lumps together two things: your ability to solve problems abstractly, which mainly has to do with how well you will do with school work, and your ability to deal with the everyday world such as, let's say, the comprehension test—which tests whether you know why streets are numbered in consecutive order. And, of course, the second type of question is much more relevant to whether someone is too disabled to cope with the ordinary world as distinct from whether they're having problems at school.

When you sit in on a lot of death penalty cases, as I do, you find they've given this guy the WAIS; it would have been much more informative if they had found out whether he could cope with the ordinary world because, if you can't cope with the ordinary world, you're much more suggestible and under the control of other people. You know, some guy will say "Come along with me. We'll rob a convenience store. Don't worry; we won't take any guns," and then you go to rob it with him and he kills someone. I think there might be a variant of the Wechsler test that would be more directly relevant to evaluating whether people are really too mentally retarded to cope with the ordinary world and are therefore easily influenced. I sit in on a lot of these cases because, of course, the Flynn effect is so relevant. What happens is you get a kid at school and the school psychologist doesn't have much money and uses an obsolete version of the WISC, so that inflates the child's IQ; that is, rather than being compared to thirteen-year-olds of today, they're being compared to the thirteen-year-olds when the test was normed, which could be twenty years ago. Well, at 3/10 of an IQ point a year that inflates their IQ by six points. And if they end up on death row twenty years later, it's a hell of a time to get the judge's mind around the fact

that the IQ is inflated and that the person is really below the cutting line of seventy for execution when here they've got on their school record a score of seventy-six.

NAJP: Does an IQ gain actually mean an intelligence gain, and I'm thinking here in terms of standard error of measurement?
JF: Well, the standard error of measurement, I don't think it is that relevant. If you have enough data, the standard error of measurement is pretty low. When I first made the case that Americans had gained fourteen IQ points between 1932 and 1978, I had over seven thousand subjects, and I don't know, about seventy studies, and, while it's not quite like a random sample, a lot of them were standardization samples. So, I don't think that the standard error of measurement really is terribly relevant because we often have huge samples. Take the Dutch sample. They had an offshoot of Raven's that had been unrevised over a period of thirty years, and, translated into IQ points, the Dutch had gained twenty IQ points and the samples were huge and saturation samples. So, I don't think the standard error of measurement calls the data into question; the question as to whether these gains are intelligence gains is one I'd be happy to discuss. That's a much larger subject.

NAJP: Is this Flynn effect caused in part by the decrease in infectious diseases and other viruses—you know, malaria, etc.—as nations develop?

JF: I'm sure it is. It can't help but be. If you go to rural Kenya, there have been explosive IQ gains in recent years, and, these are partially due to the introduction of formal schooling of an enriched character, but I'm sure it's also due to medical missionaries and other doctors who are lessening the kids' handicaps due to things like malaria. In the West, I'm sure these things were active up to perhaps World War II.

Since then, I don't think so. My data seem to indicate that since World War II, improvements in medicine and improvements in nutrition in highly developed countries have not been an important factor. I traced fluctuation in British Ravens gains all the way from about 1932, or maybe it was 1937 (Flynn, in press, Chapter 3), and I found that the top half and the bottom half of the curve fluctuated in a way that couldn't be accounted for by any nutritional history. The theory is that the upper classes were always pretty well-nourished, and that improved nutrition should bring the lower classes closer. So, the top half of the curve and the bottom half of the curve ought to show less of a gap, and I found that the gap between the top half and the bottom half of the curve fluctuated all over the place, and you couldn't really fit the nutritional history to it.

Now as for obstetrics, yes, you have some children who come into life that are less brain damaged, but you also have many kids saved, who are very premature, who, on average, have lower IQs. The British obstetricians that I talked to—including the most prominent—were of the conclusion that there would be no gain in mean IQ from this and perhaps, actually, a slight loss. That is, the new low IQ kids that were surviving easily outbalanced the fact that others are less damaged than in the past.

NAJP: We call it heroic medical intervention here in the states.

JF: That's right, and many more kids are now surviving who are destined to have lower than average IQs. That isn't any reason for not doing the procedures, but it does mean that it would be rash to assume that these improved procedures are actually a factor in raising the average IQ.

NAJP: Okay. You've kind of answered this, but I'll throw it at you again. Are the traditional testing instruments still valid; should there be supplements to the IQ tests like you mentioned—the Vineland?

JF: Well the Vineland is used very widely, but, for some reason, it's not used in the court proceedings. The reason for that is that the Supreme Court held that they should use mainstream IQ tests, apparently being ignorant that the Vineland test even existed. But any competent psychologist should use it, though a lot of them don't. It's not a perfect test, by the way. You have items like, "Do they make their own bed?" Well, of course, maybe children always docilely made their bed unless they were incompetent to do so, at one time, but, today, children often just don't make their own bed. So maybe we need an improved version of the Vineland, but I'm not expert enough in that area to know exactly how to improve it. But I certainly think that the Wechsler test should have the kind of variant I mentioned above. Now as to whether the tests are still valid, let me give you an illustration, and this gets us into what's really caused IQ games over time. In 1900, if you asked a kid on Similarities, what do dogs and rabbits have in common, a rural kid in America would have been likely to give the utilitarian answer. They'd have said, well, you use dogs to hunt rabbits. However, you might have found an exceptional kid. Even then, kids had a median of about four years of formal schooling, and you might have an exceptional kid and an exceptional class whose teacher had introduced them to evolutionary biology, and, the kid might think: well look now, they're asking what dogs and rabbits have in common, not so much what they're used for, and the teacher did say something about mammals and reptiles. Maybe

what they want here is that dogs and rabbits are both mammals. I think that you and I would agree that that would be a very bright kid circa 1900. So that item wouldn't be illegitimate, but it would probably be distinguishing, let's say, people above the ninety-fifth percentile from people below it. It would still be a legitimate item today. But today, that item would probably be distinguishing the upper seventy-five percent (75%) from the bottom twenty-five percent (25%).

That is, any kid who has had much formal schooling today has been saturated by the modern world and thinks classification a very natural thing to do to understand the world. And the average kid today would probably say mammal without even thinking about it. So IQ gains over time do not automatically make items less relevant. They often change where on the IQ scale they're discriminating. They may have been discriminating toward the top of the scale years ago, and now they've sunk. This means that you have to watch out for ceiling effects. Raven's Progressive Matrices has become so easy over time that you have the top twenty-five percent (25%) all crammed up against the ceiling, and that, of courts truncates variance, and truncates correlations, and makes it much more difficult to use the test. Indeed, to use it among university students today is probably ill advised; you'd have to use the *Advanced Progressive Matrices*. Now recently, Raven's has been taken over by a new outfit, the Cambridge Psychometrics Center, and they have put out the *Raven's Plus*, and it does try to introduce items that stretch kids more at the top end.

NAJP: Let's talk now about the legacy of David Wechsler and, if you want, Binet. These individual tests of IQ seem to have stood the test of time. Why do you think this is?

JF: For the reasons I've given, but also because Wechsler in particular had an intuitive concept of intelligence that I think is very close to the kind of intelligence that, in a Western advanced-society setting, predicts academic performance. What, after all, would be the aspects of intelligence that would help a kid in school in America today? Mental agility, that is, some people have quick-silver minds; on the spot, they can draw inferences about problems better and faster than the rest of us. The Wechsler always had on-the-spot problem solving tests, like Block Design or Picture Arrangement, that test to some degree for mental agility, but now they've added a matrices test. They also test to some degree for something else you need, and that is working memory. They have always had Digit Span, but today they have added better working memory tests. They have always used Coding to test for information processing, but today, they have added Digit Symbol. They have always

tested for the fact that you need a certain amount of learning to apply your intelligence in the modern world: you need to be able to do a fair bit of arithmetical reasoning, you need some general information, and you need a reasonably sized vocabulary.

Now, what the tests haven't picked up, of course, except indirectly, is that you need certain habits of mind. I've referred to these already—that is, a kid transported from 1900 into the present school system would take a few years to adjust because they wouldn't be in the habit of classifying things as a prelude to understanding them, and they wouldn't be as used to using their analytic intelligence on abstract categories. That is, they would use logic alright, but it would be much more concretely applied—like: beagles are good for hunting; that's a beagle; therefore, that will be good for hunting. But they would have difficulty in taking Raven seriously because it wouldn't reflect their environment. Nonetheless I think they've stood the test of time because lying behind the Wechsler test is an intuitive concept of intelligence, namely mental agility, speed and accuracy of information processing, a good working memory, a reasonable background of educational materials and skills, that together are a good model of intelligence for predicting academic achievement.

NAJP: There are a few new people out there, Alan Kaufman—whom I've interviewed— and Cecil Reynolds; they've formulated their own ideas. What is your view on Kaufman and Cecil Reynolds?

JF: Well, I've interacted with them mainly in terms of their views on IQ gains over time. I think it was Kaufman who argued that the directions of the modern WISC, in the counterbalanced design, introduce a bias in favor of IQ gains over time on certain subtests. I wrote a rebuttal, and I think the data show that he's mistaken (Flynn, 2010). I haven't looked so much at their attempts to refine the concept of intelligence, probably because I'm pretty happy with the concept of intelligence I've got.

NAJP: Are our current cognitive or intellectual measures accurately standardized?

JF: It's much harder to standardize adults. The school children particularly up through the school-leaving age—let's say up until fifteen (15) or sixteen (16)—are a captive audience waiting for you, aren't they? And as long as you get a good, stratified sample of schools nationwide, you're going to get a pretty good sample. You may miss the kids in the most dangerous ghetto schools that perhaps your testers are reluctant to visit, but, if you give them protection and get them in there, and you get a really good stratified sample, I think that probably present IQ tests for

children are accurate to plus or minus one IQ point. I have a grid that I use in my books which I use to check Wechsler and Binet tests against one another, and certainly the results for children over time give what you would expect if the standardization samples were accurate to plus or minus a point, maybe even a little less. Adults are much tougher, aren't they? I mean, they're at the workplace or they're at home. Well, it's a nightmare to try and get a stratified sample that gives you just the right homes to visit, just the right workplaces to visit, there's a problem of people being out and not being in, and your interviewer is getting bored and going next door. I would say these tests are probably accurate to within plus or minus two (2) points. Now we're talking about at the mean. Getting an adequate sample at the bottom of the curve, to test those who are mentally retarded is much more difficult, and I've made highly specific recommendations as to how we might do that, but, of course, the answer is oversampling. That is, you'd need many, many more low-IQ subjects and you would want to check them against people who are presently institutionalized or on welfare because they can't cope.

NAJP: What are your thoughts on these diagnostic subscales or these profile analyses?

JF: We have to watch those. I've said this in print. Just as you will get an inflated IQ score if you give someone a test with obsolete norms, if you use the AICD profile (Arithmetic, Information, Coding, Digit Span) which is supposed to diagnose learning disabilities, and you give that test ten (10) or twenty (20) years after it was normed, then the kids will appear better on the subtests that show the larger gains over time. And, they will appear worse on the subtests that show the lower gains. So you'll have a situation where it looks as if you're getting an AICD profile just because of the uneven obsolescence of the various subtests (Flynn, 2007, p. 130). Fortunately, they're now trying to norm the tests every ten years, which reduces the problem. In the past, it's been, a considerable problem, because they say, watch out if the kid hasn't done well on arithmetic, information, and digit span. Well, those are three of the ACID subtests, aren't they? They're also three of the subtests that show the smallest gains over time so perfectly normal children, if given an obsolete test, will do poorly on them show a modified AICD profile.

NAJP: How should IQ tests be used to determine if a learning disability exists, or I don't even know if you believe in this thing called a learning disability?

JF: I think that schools with a middle-class clientele are in a difficult situation. "Learning disabled" is becoming a polite term for what we used to call mentally retarded. Now of course mental retardation is a learning disability, there's no doubt about that, and I don't care too much about which term you use but we've retained both terms! And this means that schools today are very reluctant to pin a label of mentally retarded on someone if they can pin a label of learning disability. If that particular kid commits a capital crime thirty years later, he'll rue the day they did it because the school psychologist will say "We don't think Johnny really suffers from mental retardation; we think he is just dyslexic."

I'm not throwing out dyslexia. Presumably some people do process letters in the reverse order or have problems with it. I'm just saying that many parents today just don't want to hear the phrase mental retardation, and schools don't want to give it to them. And, indeed, who knows? They might get sued. I guess that would be a possibility. So, the polite term comes in, and this, of course, changes the statistics. In the old days, when you re-normed an IQ test, immediately, the number of kids classified as mentally retarded leaped up because you're now using the tougher norms, weren't you? So now that leap is being modified by the new diagnostic category: rather than being a leap up of kids being classified as mentally retarded, some of them today will be shunted into other diagnostic categories. Also, the school psychologists, to their credit, often without telling anyone, say to themselves, 'well this is crazy,' the school can't have been hit by a plague of mental retardation overnight, and, although they will record the IQ scores accurately, they will be more reluctant to put a label of mentally retarded on them. They're supposed to do that anyway; they're supposed to not take the IQ score as seriously as their clinical judgment. But often their clinical judgment is very much influenced by the IQ score unless they get the shock of a jump in the number of kids they're classifying.

NAJP: What types of research or questions should researchers be interested in, in terms of IQ and intelligence, in 2012?

JF: I'm not a professional psychologist. The thing that strikes me most is the extent to which psychology has diverged from other disciplines. It's a tragedy the extent to which people who write on, let's say, the theory of intelligence are ignorant of scientific theory. But even within psychology, it's amazing how many people are not informing their research with sociological imagination, which is a term borrowed from C. Wright Mills.

I don't endorse everything C. Wright Mills said about politics. I am on the left as he is, but I'm an independent thinker. But he was right

about that. There are innumerable things being done in psychology that are misinterpreted because we detach the psychology of a cohort from its social situation and the evolution of society over time. Now, I could give you a whole range of examples, but I'll try and pick a few.

I don't know if you're aware of the research I've done on Black solo motherhood, that is, the Black marriage market (Flynn, 2008, Chapter 4). You had people at one time saying that Black women tended toward being psychotic because they had a pessimistic view of marriage, and that, after all, is characteristic of people with psychotic tendencies. Well, that's all very well if you have a white daughter who has white males to choose from as the husband. If you have a Black daughter who is confined mainly to Black males, and you find how many of them that are in jail, are on drugs, have AIDS, or are chronically underemployed, that Black girl, unless she is completely denying reality, ought to be pessimistic. Her chances of getting a good husband are much, much worse. There are about fifty-seven (57) viable Black men for every hundred Black women of marriageable age, so almost half the Black women of a particular generation have to choose between having a child from someone who will not prove a permanent or suitable partner and going childless. Well, they're not going to go childless. This also, of course, rebuts the diagnosis that these Black women are responsible for their own trouble and problems because they're lascivious and have children out of wedlock. They have children out of wedlock, and that no doubt does make them an unappealing marriage partner for the next male that comes along, but what the hell are they to do?

Now that's just one illustration. I could give you a number. For example, the people who test university students and take the IQ differential between men and women at face value without looking at the larger social picture and seeing that it's very likely that women have lower IQ thresholds because girls are more docile at school. A girl with an IQ of one hundred often works like spit and get high grades, and boys rebel and don't. So you're likely to find a lot more girls with an IQ of one hundred at universities. I mean, this is another failure of the sociological imagination.

So, I think one of the difficulties with IQ research is that it's hampered by sociological blindness. Another example is from my own research on IQ gains over time (Flynn, in press). To the ordinary IQ tester, particularly the adherent of G, IQ gains either had to be G gains or they were mere artifacts. You know, they identify G with general intelligence. Well what does G mean? It really means, essentially, that a person who does better on one subtest of the Wechsler does better on all of the subtests, and the reason we think that G is important is that the G loadings of these subtests increase as the cognitive complexity of the task

increases. And that does mean that G is relevant to intelligence differences between individuals of the same cohort. But then they say, "Ah, IQ gains over time don't exemplify the G pattern: the gains on a particular subtest may be greater than another, even though they both have the same G loading. Therefore, they must be trivial artifacts."

Well, of course, this is nonsense. G is a relevant concept when you look at testing the same kid, in the same society, at the same time. But over time, it's terribly important whether kids have made any gain in arithmetical reasoning, setting aside the G loading of the subtest. That is, we want kids to learn more arithmetic. It becomes terribly important that adults have gained more on vocabulary than their teenage children because it gives us a clue to a sociological phenomenon—the increasing, atypical vocabulary and power of the teenage subculture, and concerning that, the G loading is not terribly important.

I use the example of the decathlon. Imagine that over time, you had big gains on the hundred meters, moderate gains on the low hurdles, and virtually no gains on the high jump. Well it may be that all of these subtests would be highly loaded on athletic G, and you would say, 'well, the performance gains aren't in tandem with the G gains; they are all just artifacts. We're just not interested unless there's been a G gain.' Well, athletic coaches would be interested. They would say, 'this is nonsense.' The reasons these events show differential gains over time is that G shows mere correlations, and these events are functionally related. The hundred meters event has become more and more of a glamour event over time: girls now stalk the world hundred meter champion. But the high jump is pretty boring, it takes hours to get a winner, so kids are less interested in the high jump, which is a problem for coaches. Most of the kids are only interested in the hundred meters. Now increasing sprint speed automatically lowers times for the hurdles because speed between the hurdles is important. But in the high jump, if you run at the bar full tilt, you'll run right to it and mis-time your take off. You see the point? There is no functional relationship between sprint speed and high jump.

So, the G loadings obsession led to the dismissal of IQ gains over time. They had to be either G gains or mere artifacts. They couldn't look at them for what they meant in the social context. It would be like saying "I'm not interested in the fact that we've invented machine guns because I'm not getting a G pattern in our differential ability to kill people." Okay, that's quite true. The reason that we're improving in killing people over time has nothing to do with the fact that people today have superior reflexes or eyesight, but it's a hell of an important thing if you're writing military history, isn't it?

NAJP: What have we neglected to ask?

JF: Well, the business about whether IQ gains are intelligence gains. We have only hinted at that. And I think I have something important to say.

Let me give you this scenario: over the last fifty years, you would find four trends. *First*, the brain potential of children at conception has not improved. That is, the programming of the human brain has not been upgraded over two generations because natural selection takes a lot longer than that to work. *Second*, the human brain, at autopsy, would look different over time. People today are using their analytic abilities more than they did in the past, and the brain is like a muscle – so we would expect that a lifetime of differential exercise has brought about a different brain. After all, if you spent a life time swimming, you'd have a different physique than a weight lifter. You're probably familiar with the study of London taxi cab drivers that showed that the spatial sections of their brain – their mapping sections – were very highly enlarged because of their exercise over time (Flynn, 2007, p. 67).

Third, let's turn away from brain physiology to the sort of problems you can solve. You'd be no better today in solving the problems of everyday life. Despite their low IQ scores, our parents were not mentally retarded. *Fourth*, on the other hand, they may not have been as good as us at applying logic to abstract categories like Raven; they weren't as good as us at classifying things with scientific or abstract categories; they didn't take hypothetical problems as seriously. That means they wouldn't be as good in moral debate. If you said to one of them, "What if your skin turned black?" My father, who had mild racialist tendencies, would have said, "Who in the world have you ever known that that has happened to?" That is, the hypothetical was alien to him. Today, a racist would have to take the hypothetical seriously.

In sum, if you ask, "Are we more intelligent in the sense that we can deal with a wider range of problems intelligently?" - of course. If you ask, "Can we take their lower IQ scores as a reason to classify previous generations as mentally deficient?" - Of course not. So as to whether we're more intelligent, I'll let you choose. As long as we understand the trends, we should not be a slave to words. Brains are no better at conception; brains are differently developed by autopsy; we are no more capable (perhaps even a bit less capable) of dealing with pragmatic problems of everyday life; we are more capable of dealing with problems that apply logic to abstract categories and the hypothetical. Whether you want to say we have better adapted brains or more intelligent brains, this is of no significance as long as we agree on the four trends.

An aside: Anything original I do, I have the hardest trouble publishing. I think my finding that bright people have after 65, a steeper downward curve for analytical ability, a less steep downward curve for

verbal ability is interesting (Flynn, in press, Chapter 5). Let's take two possibilities. Is it a matter that the portions of the brain that do analysis tend to wear out faster than the rest of the brain? So that people who are using analytic ability all the time have a stronger downward curve in old age? I don't think it's very likely, but it could be; brain physiologists might tell us. Or is it a matter that you exercise your brain if you have a cognitively demanding profession and the average person in a humdrum job doesn't; and then, when you retire, you suddenly give up most of that exercise? That would be nice, wouldn't it? If you keep taking on cognitive demanding work after retirement, you won't face the downward spiral.

Or it could be a combination of the two. Are you familiar with that wonderful European study where they looked at countries with differential retirement ages and gave them the same episodic memory test (Flynn, in press, Chapter 5)? They found that in a country like Switzerland, or Sweden, where 90% of people who were working at fifty-five are still working at sixty-five, the loss in episodic memory was only half of what it was in France, where 80% were retired. That certainly suggests that mental exercise in old age will help your working memory, doesn't it?

NAJP: I would say that in Switzerland, they are getting good, fresh air and exercising in climbing up and down the mountains, and, in France, they're drinking a lot of wine.

JF: Yeah, that could be. But the finding held across a whole group of about fifteen or twenty countries. In other words, it wasn't just one, they had all the OECD countries. It is a pity they gave them a common episodic memory test—not an IQ test. Maybe the results would be the same for analytic intelligence. I just don't know.

REFERENCES

Dickens, W. T., & Flynn, J. R. (2001). Heritability estimates versus large environmental effects: the IQ paradox resolved. *Psychological Review, 108*, 346-369.

Flynn, J. R. (2007). *What is intelligence? Beyond the Flynn effect*. New York, NY: Cambridge University Press.

Flynn, J. R. (2008). *Where have all the liberals gone? Race, class, and ideals in America*. New York, NY: Cambridge University Press.

Flynn, J. R. (2010). Problems with IQ gains: the huge vocabulary gap. *Journal of Psychoeducational Assessment, 28*, 412-433.

Flynn, J. R. (in press). *Rising IQ and the twenty-first century: Progress and puzzles*. New York, NY: Cambridge University Press.