Research News

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Impacting student retention & outcomes

BY SEAN MOORE
Research Promotion

Every year legions of students apply to universities and only those showing sufficient intelligence and academic stamina get in, but then, oddly, many fail in the first year. Why?

For over 20 years psychology's Raymond Perry has been gathering data to answer this question and solve the problem he calls the "paradox of failure".

"The paradox of failure is predicated on the assumption that you only let the best and brightest in," Perry said. "So if you're accepting the best and brightest, how come some fail? And it's not like 5 per cent of new students fail. It's 30 to 35 per cent across the board. It's astounding."

In Canada, roughly 30 per cent of first-year students do not return for a second year, and roughly 40 per cent graduate after five years – this in spite of an average entering grade of 77 per cent (B+).

His lab is a partner in an international research consortium consisting of the University of California at Los Angeles, the University of California at Irvine, and the University of Munich. These schools have reported similar findings.

"The university system is designed to educate highly-educated people because they are your brain trust for the future. We can't afford to jettison 30 per cent of these talented people. Sure, some will recover. But that's a heck of a way to nurture your resources."

So why is this happening?

The main culprit, Perry has found, is how students explain what happens to them in their courses. When failures happen, students ask why? How they answer determines their scholastic success, and their explanations have three properties: the cause is framed as something either internal or external to them; their explanations will be either transient or enduring; and they'll decide if the situation is controllable or not.

In short, failing students think they either lack ability or lack effort.

"Does it matter? Absolutely. That lack of ability attribution is devastating compared to the other," Perry said.

A low-ability attribution is motivationally dysfunctional because it affirms the expectation that failure can reoccur (thereby making failure seem a stable, uncontrollable foe). Lack of effort, however, boosts motivation because it promotes expectations that change is possible through, say, better note taking or more aggressive study.

This attribution theory applies to many areas of society. Indeed, Perry's, colleague, Judith Chipperfield, who examines it in the context of health and aging, found seniors who feel psychologically in control live longer and use the health care system less.

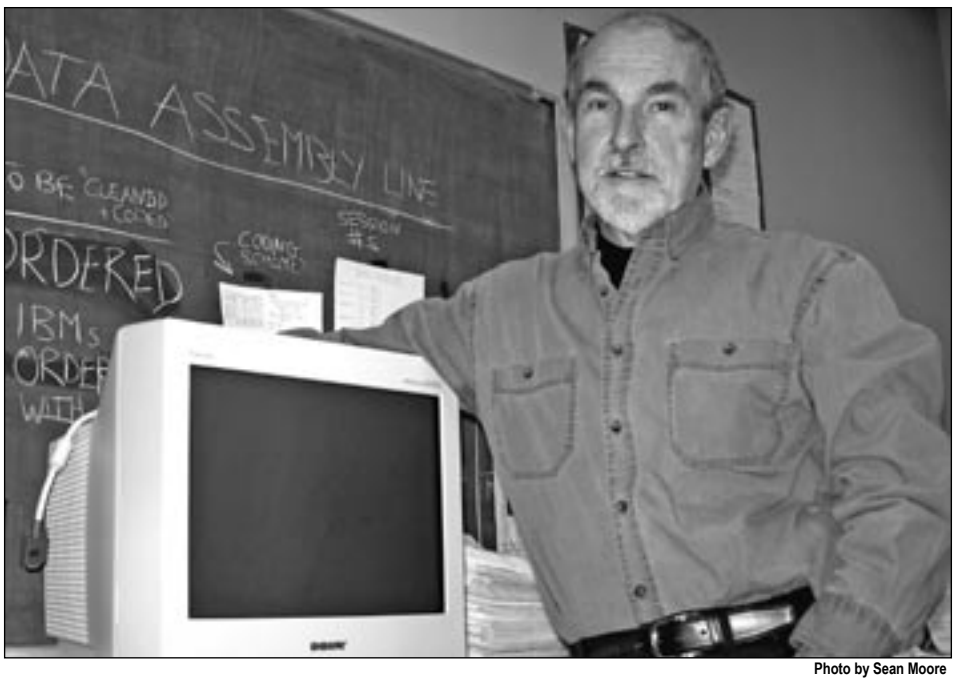

Photo by Sean Moore

Psychologist Raymond Perry is researching ways to better the grades of first-year university students.

For students, Perry developed a method to modify their explanatory thinking. It's called attributional retraining and it replaces dysfunctional attributions with functional ones.

Groups of 15 to 50 attend an intensive and regimented one-hour treatment intervention that involves a communication about success and failure, and procedures that consolidate the intervention's message. Afterwards, on average, students see a 10 to 12 per cent increase in their grades by year's end and in GPA several years thereafter.

"When we first saw the effects of this I refused to believe it, but it's been 17 years," Perry said. "It's a puzzle as to why it works, but I spend less time trying to figure out why it's a puzzle than I do trying to make it more impactful."

February is national Psychology Month. Visit the psychology department to learn more about what impacts psychology research can have.

Compounds lessen obesity's ill effects

BY SEAN MOORE
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Obesity already has many antagonists, but human nutritional scientist Carla Taylor is adding two acronyms to the list: CLA and ALA.

CLA is conjugated linoleic acid and it's found naturally in meat and dairy.

Since 2001 Taylor and physiology's Peter Zahradka have been looking at CLA's effects on obese rats. CLA has 13 isomers and their lab found that a mixture of synthetic and natural isomers fed over an eight week period reduced liver lipid concentration in rats by 62 per cent, and improved liver function.

What's more, the rats showed improved insulin sensitivity and a reduction in inflammatory markers like leptin, a hormone that has a lot of regulatory effects on metabolism and immune functioning. And the rats experienced this all while losing no adipose tissue, although individual fat cells did shrink.

"So by feeding them this compound, it's almost as if we can turn this adipose into a more healthy fat," Taylor said. "It's very interesting. Up until now everyone thought you had to lose fat to gain benefits. But this is introducing a new idea: change the functioning of the fat cells and benefits may result."

The researchers were interested in using CLA as a preventative measure against obesity's ill effects. What they found pleased them but don't expect to see CLA supplements in your local pharmacy anytime soon.

Most of the positive effects were bestowed by synthetic isomers, and only in rats. Other studies found CLA harmed mice, and human studies showed mixed results.

"But maybe this compound can be a model for something else in our diet that could be having some positive effects on the adipose tissue," Taylor said.

The other compound under investigation in her lab is alpha-linolenic acid (ALA), an omega-3 fatty acid synthesized in plants like canola and flax.

Taylor recently finished experiments examining the effects of dietary ALA on immune function and inflammation in an obese rat model. The data is still being analyzed.

Photo by Sean Moore

Human Nutritional Scientists Carla Taylor is investigating the effects compounds have on obese animals' immune function.

Having excess adipose tissue tends to alter the immune response and to upset the ratio of certain molecules circulating in the bloodstream, resulting in more pro-inflammatory mediators, like leptin, and fewer anti-inflammatory ones.

Past studies have shown that omega-3 fatty acids derived from deep ocean fish taper leptin production. But, Taylor notes, if everyone in Western countries ate the amount of fish the American Heart Association advocates, the ocean could not meet the demand.

So given that, and piscatorial mercury levels, other sources should be examined.

"We're interested in knowing if and how ALA affects adipose tissue, more specifically the molecules the adipose tissue produces, and how this affects immune function and inflammation," Taylor said.

Marine sourced omega-3 is commonly referred to as EPA and its chemical structure makes it readily useable by the human body. But our bodies can take ALA, add two more carbons and two more double bonds to it and voila, it has EPA.

"So the thing is, we don't need to be eating any fish and our body can still get the EPA our bodies need. We want to see if plant-based omega-3 fatty acids can improve immune functioning in obesity."

Bringing Research To Life

Research News is Published
by the Office of the Vice-President (Research)
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