Title: Dr. Ochsner and the Quest for the "Holy Grail" of Emotion Regulation
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We all experience emotions and attempt to regulate them in our daily lives. Emotions come in many forms, just as regulation strategies come in many forms. In some situations, we might choose to distract ourselves from the emotion. In others, we might ruminate on the experience for hours, thinking about the things that could have gone differently. In still others, we might spend time thinking about the emotion, our experience, and reframing that experience in a more positive light. But do we "choose" which emotion regulation strategy for a given situation? If so, how? What's the process behind it? These questions and more have kept Professor Kevin Ochsner busy at Columbia for the past several decades. But the now Chair of the Department of Psychology has experienced several redirections, or reappraisals, of his own in his career.

Dr. Kevin Ochsner's journey to studying emotion began on a dusty futon in a shared student apartment in Cambridge, Massachusetts. It was around the end of October, and Dr. Ochsner had started his PhD at Harvard studying implicit memory. But Halloween this year brought a spooky experience that would change the trajectory of his career. The night before a party at his advisor's house, he awoke, sweaty and disoriented, on the futon with one word echoing in his mind: "emotion." Dr. Ochsner sometimes jokes that he's the "posterboy of the unconscious" as his mind occasionally provides a stroke of insight, leaving him to follow the breadcrumbs to find the steps that led to that insight. It was not an immediate process to trace this particular insight back into his experience. But, after a few years, he realized he spent a significant amount of his waking hours thinking about how emotions play themselves out in our social relationships. And he started to wonder: how do people make sense of their feelings to move forward after disappointment, loss, tragedy?

Ochsner compares finding the answer to this question to a quest in his favorite childhood show: Monty Python's search for the Holy Grail. "I imprinted on that movie when I was a kid," Ochsner laughs. He now uses the "Holy Grail" term to refer to what he says everybody who does emotion and emotion regulation research is thinking: "We want to specify: for a given person, in a given situation, what's the strategy to get the best outcome [in regulation]? And a three-way puzzle like that is very hard to figure out."

Most science on emotion regulation looks at one thing a time --- the person or the situation --- while varying the other constant. Over time, the pieces of the puzzle start to come together. But, to solve the "Holy Grail" three-way puzzle, he says, basic science research – the science of the average -- and clinical/translational work—the science of the individual—must come together. "If you just do the science of the average (basic science), you might miss a lot of the variability between people. If you just study individuals (clinical research), you might miss

the trees for the forest." Ochsner's academic work on reappraisal has contributed significantly to tackling this Holy Grail quest of understanding emotion regulation over time.

Reappraisal, and its fraternal twin, rationalization, offer one method to moving forward from the negative experiences in one's life. Reappraisal is defined by changing the emotional meaning of events to alter the emotional experience of said events, while rationalization attempts to explain or justify behaviors or attitudes with logical reasons. "I don't think people realize their emotions are the product of their interpretation of the world," he says. In his mind, reappraisal and rationalization offer ways that we can reinterpret our experiences and major life decisions.

Let's think of this concept in terms of a major life decision: choosing a college to attend. Likely, towards the end of the decision process, we were between the school we chose to attend, School A, and another school, School B. Likely, both School A and School B both had aspects of them that appealed to us and aspects that we liked less. But now, looking back on this decision, we would likely rationalize, and say, "Yeah, it was a difficult decision, but in hindsight, I see that School A was really the choice for me." As a result, we feel good about our decision, and we don't spend much time ruminating on whether another school would have been a better fit. Yet, popular psychology often brands rationalization in a pejorative way. It argues that rationalization involves creating a veneer, that obscures people's true feelings about a situation.

Several of Ochsner's early reappraisal studies explored whether this understanding of rationalization was true. He and a colleague, Matt Lieberman, designed a study where people were asked to decide between two options that are closely matched. They studied people who had brain lesions that rendered them amnestic and gave them choices. Unsurprisingly, they found that people liked the choice they made more than they did initially. But the more important finding was that they didn't remember the choice in the first place! To Ochsner, this finding was evidence that the reappraisal wasn't a conscious post-event rationalization but something that happened in the moment that you make the choice. In that moment, Ochsner hypothesizes our brains rearrange our preferences unconsciously, leading our true feelings to reflect the choices we make.

Later, one of his students explored whether true feelings about an experience remain under the surface, unprocessed, as popular psychology might suggest. To borrow from another popular example, if you reencounter an old flame months after a breakup, are you fanning the flames or have the flames gone out? Some subjects were asked to reappraise negative situations multiple times, while others were asked to reappraise just once. Initially, in both cases, they saw evidence that individuals were less activated, as measured by fMRI brain activity, after the reappraisal. But when the researchers brought their subjects back a week later and re-exposed them to the same negative images, they found that subjects who reappraised only once were reactivated by the images. On the other hand, those who had reappraised multiple times were not reactivated. In other words, reappraisal protected individuals from the emotional reactivation. It is self-protective, allowing us to move forward in our lives comfortable with the decisions we make. Popular psychology implies that the self-protective motives involved with rationalization

and reappraisal make it self-serving and therefore negative, but Ochsner argues that self-protective motives are healthy and ubiquitous.

Despite the vast amount of work Ochsner has contributed to the emotion regulation space, he still approaches the Holy Grail quest with an appreciation of its difficulty. For a given person, for a given set of life circumstances, what works? He says, "I'm going to bet, that at the end of the day, the answers are never absolute. It's going to be more like… there's a range of things you can do in a given situation and they'll kind of move you in a certain direction towards regulation. But is there anything we ever say is best?" He shrugs. Despite understanding this challenge, Ochsner approaches these questions with excitement. Whatever we know now about emotion regulation, he says, "it's truth with a lowercase t. And it is to be superseded by better understandings that come along later." He repeatedly states that these phenomena exist around us all the time, as part of the essential fabric in our everyday life. "There's multiple careers to be made… so many strands of this fabric to be pulled apart and understood. So I think it's such a great privilege that, in science, we get to do these things at all. We get paid to do this?", he exclaims, "I kinda can't believe it!"

Reference:

Ochsner, K. N., Silvers, J. A., & Buhle, J. T. (2012). Functional imaging studies of emotion regulation: a synthetic review and evolving model of the cognitive control of emotion. *Annals of the New York Academy of Sciences*, *1251*(1), E1-E24.