

# Yes, Happiness and Climate Action Can Go Together

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**Greg Dalton:** This is Climate One. Our brains have evolved over millions of years to deal with immediate and direct challenges - but they're not so great at processing relatively new and indirect threats posed by carbon dioxide.

**Ann-Christine Duhaime:** It isn't the least bit surprising that our brains simply are not matched for this very, very rapid onset problem in evolutionary time.

**Greg Dalton:** And our brains - which like immediate gratification - are challenged by environmental and other actions that involve costs today and benefits in the future.

**Ann-Christine Duhaime:** We have to realize that pro-environmental decisions that we make generally are simply not gonna feel as rewarding in the same way that we're used to making decisions.

**Greg Dalton:** Maybe we need to change the way we frame our actions altogether.

**Jiaying Zhao:** We need to bring happiness into this picture because your happiness benefit is instantaneous.

**Greg Dalton:** Happiness and Climate Action Can Go Together. Up next on Climate One.

**Greg Dalton:** This is Climate One. I'm Greg Dalton.

**Ariana Brocious:** And I'm Ariana Brocious.

**Greg Dalton:** It's often said that the climate crisis is the biggest threat that we've faced as a

species, and yet we have real difficulties grasping what that actually means.

**Ariana Brocious:** Right. Our brains are the result of millions of years of evolution that taught us to react to immediate challenges that remained largely unchanged for eons – predators, human rivals, and food shortages.

**Greg Dalton:** And on an evolutionary scale, climate is a relatively new crisis. But it's moving fast on the scale of our lifetimes. Just look at those retreating glaciers. And we are responding to it slowly.

**Ariana Brocious:** Too slowly. The latest IPCC summary assessment report makes it clear if we don't bring emissions down immediately, we will very likely shoot past the Paris Agreement goal of limiting warming to 1.5 degrees C by the early 2030s.

**Greg Dalton:** We have all the knowledge, technology and money we need to achieve that goal. But industry-funded campaigns have spent gobs of money sowing doubt about the problem and delaying action. And governments all around the world are still moving too slow.

**Ariana Brocious:** That's true. Still, polls show as many as two thirds of Americans want to see stronger government action on climate. They are aware and care.

**Greg Dalton:** But according to a study published in Nature last year, most Americans underestimate the actual level of broad support.

**Ariana Brocious:** We have seen some great progress on the climate policy and markets front, especially in the US in this last year. But we're still not acting at necessary speed and scale. And frankly, I found this report kind of scary and disheartening because it seems so unlikely we can manage to dramatically cut emissions today.

**Greg Dalton:** Yes, but the report authors also clearly wanted to signal that there is hope—we just need to act. Which raises the question - How do our brains process an existential crisis unfolding all around us right now?

**Ariana Brocious:** To find out, I had a conversation with Ann-Christine Duhaime, Pediatric neurosurgeon and author of *Minding the Climate: How Neuroscience Can Help Solve Our Environmental Crisis*. I asked her why our brains are so ill-equipped to take action on climate disruption caused by burning fossil fuels.

**Ann-Christine Duhaime:** Our brains were designed over millennia over millions, even billions of years if you go all the way back to the essential components on which our brains were designed. And that period of time is really long. And the period of time of climate change is really short. And that's why we haven't caught up to these very rapid changes in science, technology, culture and their effects on our climate. So, it isn't the least bit surprising that our brains simply are not matched for this very, very rapid onset problem in evolutionary time, not necessarily in our perceptual time, but in evolutionary time which is the time that our brains were designed.

**Ariana Brocious:** One thing you write about in your book is that humans are guided by this internal mechanism that evaluates our actions in relation to rewards. And a big reward, especially of this modern era, is consumption. And you say, "It is more fun to get more or do more than to simplify." So, help us understand how that innate reward system, especially for those of us that live in wealthy, industrialized nations, is driving the climate crisis.

**Ann-Christine Duhaime:** Sure. First, let's talk about the word reward. And in normal conversation when we say reward, we think about something you get from using your credit card that's an extra bonus or something that you get, you know, extra points that are your reward. Or, we think of reward as something you get for doing something good and you get a prize. And when we're talking about reward in the context of the human nervous system and the rewards system. The word is used in a little bit different context and it's important to understand the difference. The human or any creature because many, many creatures going back to very ancient times have a so-called reward system. It's a system of how your nervous system is designed to work, such that events or behaviors that are beneficial for short-term survival are made more likely to be repeated. And the system that does that is called the reward system. Now, my work has been criticized by people who say it's not all about rewards it's not everything, you know, is a good thing. Not all things that influence behavior are good things. And it's important to understand that your brain uses this mechanism of reward as one part of a weight in a very complicated system that evaluates your decisions minute to minute, second to second based on millions of different inputs at any given time. And when the weight of the decision favors something typically, that is historically associated with short term survival and reproduction that weight is enhanced by the pressures of evolution. So, the reward system does on average, never with complete predictability, but on average for people it does lean us towards things like getting more consuming more having more having more security having more food having more choices having more interesting experiences. Because all of these things were part of our evolutionary influences that help to form the systems that we work with now. That isn't to say that one person isn't different from another person or that a single person doesn't change over time in what is rewarding. But there are certain predispositions based on the history we all share in common overlaid with our own genetics our own experiences and our own current circumstances.

**Ariana Brocious:** And I think this is so interesting because you know discussing this idea of reward and the way it can be almost a negative feedback loop is thinking of maybe overconsumption, right, as you're talking about. So, overconsuming a resource like food even can be unhealthy for our bodies or overconsuming a drug an addiction that type of a thing. And so, for overconsuming lots of things and we're what adding more carbon to the atmosphere and thus increasing the pace of the climate crisis.

**Ann-Christine Duhaime:** Right. But remember that you can perceive immediately what it is that you as an individual let's say consume, you know, that thing that comes and gets delivered to your door or that new thing you go buy or the new house or whatever it is that's new and in the consumption category. But the effects that are negative from any given single thing, A, you know intellectually are quite small and B, you don't see them. We don't have sensors that we evolved to need for survival for carbon dioxide. We can't even perceive it. The only way you know about carbon dioxide is to hear about it, usually from strangers, usually people you don't know and don't necessarily trust. Usually using information that you don't know directly from your own experience. You can't know it because it's not part of our equipment to be able to even perceive it. So, on one hand you have something that's immediate, tangible, feels good, is designed by evolution to make you feel more secure or more accomplished or lots of things that are in the more category. And you have to balance that against something that is fairly remote, fairly difficult to conceptualize, fairly unfamiliar. Of course this varies from person to person, and just doesn't have the same weight in your nervous system.

**Ariana Brocious:** So, I want to connect this to how we can shift maybe some of these reward systems to actually be more climate beneficial. So, an example of maybe that shifting context that can affect how we feel about these rewards is, you know, mental processes gauging our actions. I had a gas stove for a very long time. I used to really like it. I thought every time I turned it on and had to click and the light of the gas sort of this little like, hah I'm cooking, I'm doing, you know, it

was enjoyable. I liked it. I like to cook. As I learned about the health hazards of combusting methane inside my kitchen I began to not like that and it got to the point where actually turning on the gas stove or oven bothered me because I would smell the gas and it just reminded me about you know why this isn't a good thing to be breathing. And so for me, that did shift, you know, this thing I had been associating with a positive thing was now to me sort of a negative. So, how can we hack in a sense, our internal reward system to be more aligned with environmentally friendly behaviors?

**Ann-Christine Duhaime:** Arianna, that is such a perfect example. The gas is a perfect example. It's wonderful. Because what did you have to do and the way you just described it is exactly the way the process happens. Here was something positive, probably even the smell of the gas because only the coolest cooks cook with a gas stove like really in the know if you have a gas stove. And for a long time, everyone was, you know, taught that or heard that through the grapevine of the way we learn things which is through our peers, our society, other people. And now of course things we read things we see, things we hear online, all kinds of sources of information. And true serious really cool cooks all cook with the gas stove. And so, when you even smell the gas and saw the blue flame and got the special pot that went on the gas stove. This always rewarding it was reinforcing it make you feel good in many, many ways. And then when you serve that great food or ate it yourself you felt even better. It's all part of how we make decisions, how we develop preferences. Now, it's so interesting to me and so in alignment with everything that is described in the book how you've changed. So, what was the input? The input was, you know, you're an intelligent person who is well read and knowledgeable and this whole climate change thing is starting to object on to you based on what little -- but it's starting to bother you, it's starting to, you know, you're starting to feel like I need to do something. And now that thing that was positive becomes aversive. This very smell of the gas became aversive. It's like this is methane. Natural gas, baloney! This is methane this is a bad greenhouse gas. And in addition, you have read and heard and learned that it's full of all kinds of particulates it increases the rate of asthma. It gives you worst indoor air quality. There are also health effects. Now something that was positive has become negative. And this is how change occurs. Your brain, our brains are exquisitely designed to be influenced by all kinds of inputs so that we can change our preferences. Now, the problem that we run into with climate change is that those inputs by and large are not the ones that we are designed find most powerful. And that's because as I set up earlier it is information that is distant from people, we don't know from experts with expertise we can't share telling us things that make us feel bad and not good. And so, even though you changed your opinion about your stove and so you get a brand-new, fancier stove that is not gas that you love, yeah, induction. That, although there are people who are, you know, there's all sorts of forces at work in the world to try to shift your preferences in mind. But let's say, new induction stove and now you learn to cook on that and you have to get over the hurdle of transitioning your behavior to something new. You have to learn to cook a new way you might've to get, you know, different pots and pans. Whatever, you change your recipes, it works. So, you've just given the perfect three-part difficulty of climate change behavior with respect to the human reward system which is you're pretty comfortable with the way things are. You like them. You have to make a change based on intellectual input. Not a visceral input, not something that is negative necessarily in and of itself, but something you hear cognitively. Not in your gut, yes, your gut may say I don't really want to have that indoor air quality. I'm worried about my family or whatever. But still it's invisible, it's totally invisible. Now you have to make a change that requires intellectual homework. It requires a potentially investment of resources. It involves learning new things and changing your behavior for what. And this is what it's so difficult. However, you've also described perfectly how it can be done. The difficulty is that a lot of it is input from intellectual sources, from cognitive input, not from bringing your finger on the stove therefore, you need something new or you know it doesn't cook well anymore. I mean, those are the causes, causes are basically things you learned and things that we learned from strangers that we don't know that are not part of our own social network, it's just a bigger lift. It can be done however.

**Ariana Brocious:** So, taking that just one step further you've explained these sorts of the neuroscience here, but you know psychology has a lot as well to play. And I'm curious if you can explain how there's a compliment between psychological and behavioral change aspects of this and the idea of nudges. Can nudges be enough to shift behavior in the ways we're talking about.

**Ann-Christine Duhaime:** Right. Great question. So first off, why does neuroscience matter at all in this. Like we all have brains. What difference does it make? The question I set out to try to answer for myself in this exploration was are our brains malleable enough can we change. Do we have the capacity to change? Because remember that our brains are biologic organisms just like our hearts and our livers and all those other sorts of to me kind of less interesting parts of us. But it nonetheless has certain limits. And one of the questions is, does our brain have enough flexibility to make these kinds of changes? Because if we don't then that's a different story. And if we do then we need to look at what is it that helps us to change. So, part two of your question is what about psychology. Psychology is super helpful as a discipline to studying and teaching what is it that helps us change in a given context in a given set of circumstances. So, the neuroscience is how much can we change what are our biologic limits. And the psychology part is what has worked to make people change in the past. So, you mentioned nudges and for listeners who, you know, aren't super familiar with what that's all about. It's what's called choice architecture. the classic example is in a school cafeteria you don't want the kids to eat the pastry that has 400 cal in one bite. You want them to eat fresh fruits at the end of the dessert one. And so, what do you do? You don't take away the puff pastry but put the apples to where it's easier to reach and you sign them up so they look really pretty. And it's the last thing they see before they check through.

it just makes the healthier cheaper whatever your goal is it make that choice the simpler choice. And that has been applied to changing behavior for climate related goals. And it's had mixed success. There are some people who have done some experiments that suggest okay maybe in certain ways it helps. It may not be enough. In fact, there is no one single behavior change strategy that's gonna be enough. But the ones that seem to be the most powerful in difficult behavior change overall. But what helps with difficult behavior change. One of the biggest is substituting the rewards you're giving up getting rid of the rewards you're giving up and substituting social rewards. And social rewards are incredibly powerful. So you with your stove might've had a better time if you and your sister and three of your closest friends all had gas stoves, all took a cooking class together all, you know, went to each other's house and did brunch and you all decided to get rid of your gas stoves at the same time. Here's a social reward where each of you is reinforcing the other, and those ripple effects can be very, very powerful.

**Greg Dalton:** You're listening to a Climate One conversation about how human brains understand and evaluate behavioral change. Our podcasts typically contain extra content beyond what's heard on the radio. If you missed a previous episode, or want to hear more of Climate One's empowering conversations, subscribe to our podcast wherever you get your pods.

Please help us get people talking more about climate by giving us a rating or review. You can do it right now on your device. You can also help by sending a link to this episode to a friend. By sharing you can help people have their own deeper climate conversations.

Coming up, how does the framing of individual climate action affect people's motivations?

**Jiaying Zhao:** Those narratives make people feel shameful and guilty, and these negative emotions are not conducive to long-term behavior change.

**Greg Dalton:** That's up next, when Climate One continues.

**Greg Dalton:** This is Climate One. I'm Greg Dalton.

Understanding why people behave the way they do could be a critical step in bringing about more meaningful and quicker climate action. But we as individuals can only achieve so much, how do we influence those in power to alter systems?

Let's get back to Ariana's conversation with pediatric neurosurgeon Ann-Christine Duhaime.

**Ann-Christine Duhaime:** Social movements work. If they didn't work people wouldn't do them. They don't always work. But you look at the Sunrise Movement you look at some of the youth movements. You look at some of the, you know, politically very disruptive movements in climate. And these kinds of things, while people pay an enormous price sometimes for participating in these, loss of jobs, loss of friends, sometimes even loss of life and limb. These are scary things. Nonetheless, they do move the needle just like lots of other things move the needle. Economic incentives that align because of political action moves the needle. You only need to look at some recent legislation. I'm here in the city of Boston and the state of Massachusetts where this kind of legislation has made the needle of the business I work out which is a large academic medical center, it moved that needle. So that because of regulations we have to be greener in the things we do. We are obligated to do that. So, there are changes that multiple levels, you know, political, legislative movements that spur these kinds of changes on. And then of course there's individual people who change for all kinds of reasons. A legislator has a grandchild, a, you know, CEO sees a movie. I mean somebody reads a book. There are all kinds of things and each of these can be interpreted through how they act in your brain to change the complicated equations by which you make decisions. But the difficult thing is that we have to realize that pro-environmental decisions that we make generally are simply not gonna feel as rewarding in the same way that we're used to making decisions. They may feel intellectually rewarding, but you won't get that same feedback that got checked so to speak. It's a brain check, really, but we call it a gut check for making that kind of decision. Because it's totally new it's in a new realm. The bad news is, things are virtually certainly going to get worse before they get better and we need to be prepared for that. We need to be psychologically prepared for that. And we need to persist even when our brains that are designed for looking at short-term consequences to our actions are going to be disappointed. We're not gonna see them short-term consequences easily. But what will we see that can substitute for those obvious consequences of our decisions that social reward that is very powerful where we do it together we know about it intellectually, it doesn't have the same gut punch that other kinds of acquisition and decisions have in the past in our historical past and often in our personal past. And we have to do it anyway.

**Ariana Brocious:** you spend some of your days operating on very sick little kids on their brains. I mean this got to be I don't know an incredibly emotionally hard job. So, for you personally, how does taking care of really sick kids relate to taking care of a sick planet.

**Ann-Christine Duhaime:** I don't think you can do one without the other. So at least for me I'm sure there are many people who can compartmentalize, and the book describes how we do compartmentalize things that this is my shift and that's your shift. I grew increasingly concerned about the world that I was making the kids I cared for better to go live in. And I really felt like there was a disconnect between the effort that I would spend on an individual child and the effort I personally was spending on this global problem that affects all children. So, I have now really just in the past year or so made a pretty hard transition away from doing surgery on one child at a time and spending a lot more of my time on the whole climate realm. And part of that is the stage of my career, part of that is the opportunities I've been given. But I see more and more physicians, particularly those who care for children, get invested in this work in some way. They are pressuring

their supply chains to decarbonize. They are pressuring their institutions to take this seriously. They are working as advocates in their communities and in global health. So, I think that again when we talk about changing your mind. Yes, it happens one person at a time. But if the person down the hall from you or across the OR table or in the conference room with you, you find out they have a similar set of concerns it is synergistic and people start building on each other. So, that's what I was talking about about social rewards being extremely powerful. If you're the only one, you feel like a weirdo. But as more and more people start to say, hey, I take care of kids. I do some high-tech surgery or resource intensive surgery or whatever it is that I do. I need to spend some of my effort on this other thing because we need to get them a world they can live in.

**Ariana Brocious:** Ann-Christine Duhaime is a pediatric neurosurgeon and author of *Minding the Climate: How Neuroscience Can Help Solve Our Environmental Crisis*. Thank you so much for joining us on Climate One.

**Ann-Christine Duhaime:** Thank you.

**Greg Dalton:** Discussions about climate can often feel difficult and even depressing. Doom and gloom framing can drive people away from even thinking about the climate crisis. Dr. Jiaying Zhao is an Associate Professor of Psychology and Sustainability at the University of British Columbia. She believes that happiness needs to be a part of climate action, and has been running workshops to help people understand how they can pair them together.

**Jiaying Zhao:** The point of this workshop is to ask people to come up with actions that not only reduce greenhouse gas emissions but also increase our happiness at the same time. And the idea of bringing happiness in the picture is because the current narrative on climate action is very negative. On one hand it's about doom and gloom narrative about the climate catastrophe and we're all doomed. On the other hand, it's about asking people to make sacrifices like drive less, you know, shop less, eat less meat. Those narratives make people feel shameful and guilty. And these negative emotions are not conducive to long term behavior change. So, as a behavioral scientist I teamed up with my colleague Elizabeth Dunn, who's a happiness scientist, to come up with this happy climate approach.

**Greg Dalton:** And if I was in one of these workshops right now. What would you do with me? What would your first question be to approach to bridge happiness and climate?

**Jiaying Zhao:** Yeah, I will ask you, Greg, what makes you happy.

**Greg Dalton:** Being outdoors, bicycling, exercise makes me feel good. Seeing my family thrive makes me happy and makes me feel good.

**Jiaying Zhao:** That's perfect. So, let me go over those actions. Being outside is great for happiness. That's great. And you also mentioned bicycle, biking, right? Biking is excellent. That's exactly the actions we're trying to promote in the sweet spot of carbon reduction and happiness promotion. Because biking reduces the emissions associated with driving alone, right, driving a gasoline powered vehicle. But at the same time, it provides moderate exercise that activates our endocannabinoid system. So, that's typically the phrase "bikers high" that you experienced that kind of euphoric feeling after you bike. And now it contributes to happiness and greater mental well-being. So, biking is perfect. And you also mentioned something about, you know, hanging out with friends and family that's also great. Now, one of the biggest predictors of happiness is social connection. So, spending time with family and friends turns out to be very good for our happiness. Now, what does this have to do with climate? That means we should turn a lot of our solo individual activities into social activities. So, here's an example. Carpooling. I know carpooling is difficult to

manage because we all have different schedules. But instead of driving alone in a car I think we need to think about how to drive more people. So, this is the changing narrative part. So, instead of you just saying drive less, we should say drive more people. Now, it doesn't mean you need to drive a bus, that's probably too much. Like whenever I go home or go to work I think about who is gonna be on my way and I'm gonna reach out to them say, you know, hey, I'm heading home in 10 minutes. Do you want to join me? I can drive you, do you want a car ride. And a lot of my colleagues actually turn out to say yes. And I go sure, yeah, let's meet up in the garage and now we're driving home. So, I think those activities are not only good for the climate but also good for happiness and individual well-being.

**Greg Dalton:** That's interesting. I just want to share one example last night. I walked into a restaurant to get a veggie burger and I recognized a woman who I have known a little bit from cycling, doing the climate ride. And I wasn't sure if she recognizes me or I recognize her. I turned to my table. I could've sat down and looked at my phone and eaten my veggie burger alone, but I decided for me as an introvert, take a social risk. Went up and said, hey, you know, Lynn, how are you? And she ended up sitting down and started gave me some fake bacon that this restaurant has. It's made out of seaweed and we had this wonderful conversation about cycling and climate and, you know, and alternative plant-based proteins that sort of thing. So that's the sort of thing you're saying we do more is like not just kind of be on our phone go into our internal world, but connect with people have conversations and that's both happiness and climate action.

**Jiayng Zhao:** That's absolutely right. I think the reason we don't do it as often is we have a bias there. We often underestimate the social benefits of connections and hanging out with people reaching out. We often think, oh no, I shouldn't do it. I shouldn't text this friend because I don't think they will respond or it must be probably a lot of hassle for them. We kind of underestimate the well-being benefits of social connection. And that's part of the reason why we don't reach out. But I think we should do it more.

**Greg Dalton:** And did you have a personal aha moment when you realized you could work on climate and be happy at the same time?

**Jiayng Zhao:** Well, yeah. That aha moment came to me at the end of a long faculty meeting. This is a couple years ago when my colleague Elizabeth Dunn, she's fantastic. She approached me and asked me can we make climate action feel happy instead of miserable? And I'm like, that's it. That's right. Yes, we should. It should. We should do that. But nobody has ever done that. So, that was my aha moment.

**Greg Dalton:** You've said that negative emotions are not conducive to behavioral change, you know, the shame, etc. It sounds like action, especially if it's healthy action can increase happiness. But if someone's in a rut feeling down it's not easy to suddenly say I'm going to take some action and feel better. It's often when we, you know, we feel least able to do those things is when we need them most. So, how do they get out of that rut?

**Jiayng Zhao:** I think that they need to take this happy climate approach. They need to engage in activities that will make them feel better and happier at the end. So, it's not just, you know, well, some people act out of shame and guilt because they think if I do this, I will feel less guilty. That works for some people. But for people who are already paralyzed and depressed and distressed over climate change I think we need to maybe advocate more about those actions and say, you know what go off for a bike ride. Get out into nature, maybe bring your friends along. Maybe as friends now we are aware of this approach and for people let's say if I know someone who's depressed over climate change. I'm now gonna actively reach out to say hey, you want to go for a bike ride? You want to go for a veggie meal, an excellent vegan gourmet meal with me and a couple of other friends. So, we



can actually bring those people out of that negative cycle or rumination. And I think it's that that's one of the promising approaches just to get combat those kinds of negative mood.

**Greg Dalton:** And I saw Katharine Hayhoe the climate scientist at the climate conference in Egypt and she said she started to think that self-care is a form of climate action. Doing something healthy for oneself is actually enabling people to continue to work on these things. Yet a lot of what this sounds like is reframing rather than saying eat less meat, you're saying eat more plants. Instead of drive less, you're saying bike more. What does your research tell us about the efficacy of that kind of reframing?

**Jiaying Zhao:** We're just trying to collect data to show the efficacy of this approach. But this kind of reframing has been shown in other domains. So, a parallel to this reframing is changing let's say the loss frames to gain frames or vice versa. So, let me give an example. You can say if you bring your own bag a grocery bag you can save 10 cents or five \$.50 or whatever like depending on how many bags you use. Now saving money that's like a gain frame. It's almost like you can get these additional incentives. But if you say if you don't bring these bags with you, you're gonna have to pay \$.50 or \$.10, right, so that's a loss frame. And those two frames essentially, they convey the same information but they turn out to have different impacts on behavior.

**Greg Dalton:** People worry a lot more about we're more worried about losing \$.10 than gaining \$.10.

**Jiaying Zhao:** Well, I mean, yeah, we don't like losses. So, this is a loss aversion which is kind of one of our common biases. We hate losses more than the pleasure we get from gains. So, an example is losing 100 bucks is painful. And getting 100 bucks is pleasurable, right. But the loss aversion phenomenon refers to the fact that the pain from losing 100 bucks is greater in magnitude than the pleasure we get from getting 100 bucks.

**Greg Dalton:** So, this whole climate narrative about loss and losing, and we're losing nature focusing on the things we're losing. Is that motivating or is that the right frame?

**Jiaying Zhao:** Well, it is motivating but it's also offputting, right. So, it doesn't make people more likely to engage. It only makes some people that's actually a minority in the population. So, the loss frame, I'm not saying that loss frame doesn't work for everybody. But I was just saying that for most people on average I think this positive gain frame can be more effective than just using the loss frame.

**Greg Dalton:** You're listening to a conversation about bringing happiness to climate action. This is Climate One. Coming up, how does happiness reinforce behavior?

**Jiaying Zhao:** Your happiness benefit is instantaneous. When you bike, you feel better. When you hang out with your friends, you feel better, right? We need that instant gratification, instant reward to reinforce that behavior.

**Greg Dalton:** That's up next, when Climate One continues. This is Climate One. I'm Greg Dalton.

To stabilize the climate that supports our economy and lifestyle we need to reform all of our systems - food, transportation, energy, water. As UN Secretary-General Antonio Guterres remarked about this latest IPCC report, we need to change "everything, everywhere all at once."

It's the biggest and most daunting challenge humanity has ever faced. Because of that, many people feel their individual choices are meaningless, trivial. I asked Dr. Jiaying Zhao, Associate Professor of Psychology and Sustainability at the University of British Columbia, how big an obstacle that can

be.

**Jiayng Zhao:** That is a huge barrier for action. So, this is pseudoinefficacy I think, right. So, the bias you just mentioned is the false belief that almost everybody has, which is my own action doesn't matter. I'm only a drop in the bucket. If I do this it's not gonna make any difference to the climate. So, that perception I mean on the surface is true, yeah. Your own action on itself is gonna make a tiny bit of difference. But if everybody believes that then nothing will ever change, nothing will ever be done. So, it's almost like we need people to believe that you know your action matters and the collective action matters. We need most people, we need everyone to do these things. And that will make a huge change.

**Greg Dalton:** But I think the part of it also is that underneath that is that I will feel I incurred the cost or the change or the pain, but I don't feel the benefits. Like nature or the world receives the benefits but I received the cost today and maybe the benefit is in the future far away from me.

**Jiayng Zhao:** That's why personal sacrifices can't work because I'm incurring this personal cost. And I don't reap the benefits until much later. And the benefit is not necessarily to me, right. I think that's why the current narrative and the thinking is not gonna instigate transformative change. And this is why we need to bring happiness into this picture because your happiness benefit is instantaneous. When you bike, you feel better. When you hang out with your friends you feel better, right. So, we need that instant gratification, instant reward to reinforce that behavior to keep that behavior lasting longer.

**Greg Dalton:** Right. I go to the gym because I feel better, not because it might reduce the chance of a heart attack in 30 years. I feel good today and driving an electric car frankly is a lot more fun than driving a gasoline car today. That's immediate. The thrill, the torque of EV acceleration is immediate gratification.

**Jiayng Zhao:** Yeah, absolutely.

**Greg Dalton:** And so, how does individual behavioral change lead to systemic change? Now you're saying that, okay, we hear that. If everybody was vegan, you know, we would save the world. If everybody did action X, but that's not how it works.

**Jiayng Zhao:** Okay. So, all social change starts with a small group of people. I'm not the first one that said that. So, here are the reasons why individual actions matter. Our actions embody our values. Other people can look at what we do and our actions demonstrate to other people that we care. That we let's say take EVs or biking or eating a plant-based meal. Those actions can be observed and seen by other people. And that's number one. It's a signaling issue. My action embodies my values it signals what I believe so other people can see. That's number one.

**Greg Dalton:** Okay.

**Jiayng Zhao:** Number two is from this signal we can actually start a ripple effect. And this is called social diffusion. So, as soon as a small number of people start to engage in this action, then the number will grow more people will see. This is how like things go viral on social media, right. I think there's this recent social science research showing that there's a tipping point which is around 25% of the people in any community. As soon as you reach 25% then things start to go exponential. More and more people will adapt quickly after that. Now, I don't know if the 25% will apply to climate action, but I think we need to, you know, social diffusion occurs across different behaviors across time. This is also called diffusion of innovation. If you look at the diffusion curve of any technology in the past, like TV, cell phones, microwaves, there's always this diffusion curve that kind of outlines

the speed of adoption of a new technology or a new behavior. So yes, it starts with any new action starts with a small group of people, but they diffuse. And ultimately that will eventually will get everybody on board. So, that's the kind of the ripple effect part of individual action.

**Greg Dalton:** Sure. We've seen that with electric cars or solar in neighborhoods, even putting a mask on a bus or a plane. One person does it and other people go, oh, I'll put on my mask, so it tends to normalize. In an article you wrote on a framework for addressing cognitive biases of climate change. You list a number of different kind of biases. Which do you think are the biggest factors for accounting how conservatives and liberals form different opinions?

**Jiayng Zhao:** Wow, now you're bringing the political orientation into the picture, which I think is one of the biggest barriers for climate action. For conservative liberals I think one of the biggest biases is motivated cognition. By that I mean we look at information we look at things, events in the world based on what we believe. It's almost like we see things through a colored lens. So, we actually did a study to show this phenomenon. So, showed people global temperature change that global temperature change from 1880 all the way to 2020, 2021. That curve as you see you know it was mostly flat and it started to increase after the Industrial Revolution. It turns out that not everybody looks at the graph in the same way. So, eye-tracked them as they're all looking at the graph. And we recruited liberals, conservatives, people who are moderate centrist in the study. And we found was liberal individuals tend to look more at the rising face of the curve. That's basically the last 50 years or so.

**Greg Dalton:** The hockey-stick part.

**Jiayng Zhao:** The hockey stick, that's right. Whereas conservatives look at the flatter phase of the curve. And the reason being they look at information that's consistent with their beliefs and motivations.

**Greg Dalton:** So, we all have a story in our head about the way the world is. I learned this from the linguist at UC Berkeley years ago, George Lakoff, that when we receive information, we either conform it to our worldview, our narrative or we reject it because it's easier to reject the information than to change our worldview. So how do we overcome such deep-seated biases if these are wired into our brains.

**Jiayng Zhao:** That's a great question. This is actually called the confirmation bias. We see things according to confirm our prior beliefs basically. Now, how do you change that? There are a number of ways to do this. One is using the right frame. So, previously we talked about loss and gain frames. But using the right frames that target their motivations and ideologies can work. So, let me give you an example. For conservative individuals I think you know the frames that talk about national security. So, let's say, renewable energy will generate a warmer, more supportive society where everybody helps each other. It will help the economy will help technological development. It will protect our nation from disasters that will cost us billions of dollars every year. So, if you speak about renewable energy with climate solutions in those terms that tends to get more support and attention from conservatives.

**Greg Dalton:** Rather than polar bears and kumbaya --

**Jiayng Zhao:** Environmental devastations and, you know, yeah.

**Greg Dalton:** Planet. Yeah, so there's are different frames that speak to their values. Along those lines progressives ground many of their arguments in the virtues and sanctity of science. Is leading with science an effective way to talk to regular people about climate disruption and motivate action?

**Jiayng Zhao:** Not really because most people don't understand what science even means. That term can be polarizing on its own. So, in my communication with the public I almost never say science.

**Greg Dalton:** Wow. We had a whole march for science at one point in the United States. That's gonna be I think that's gonna jolt some people hearing that.

**Jiayng Zhao:** I think, you know, we need to use scientific evidence – that's absolutely true. We need to make policies and build programs based on scientific evidence. But using science in our communication sometimes can backfire.

**Greg Dalton:** Ah, okay. So, science just don't talk about it when you're trying to persuade someone at a cocktail party that yes it's happening, it's real, it's urgent.

**Jiayng Zhao:** Right. You can't convince a conservative individual that climate science says this because they don't believe in climate science to start with. So, that's the point, right? But obviously for liberal individuals or even people who are centrists. I think science works like they love the science narrative. They love the fact that 99% of climate scientists believe in the anthropogenic causes of climate change like that's what they would listen to. But not for conservatives and people who are skeptical about climate science to start with.

**Greg Dalton:** So, explain the importance it sounds like you're talking about ingroups and outgroups. And for some people scientists are an ingroup and for other people, a scientist or an outgroup. So, explain ingroups and outgroups and how that shapes how people evaluate relevance and risks of burning fossil fuels.

**Jiayng Zhao:** Yeah, so that's the messenger effect. Who is conveying that information to you matters a lot. So, people in general tend to listen more to ingroup members. So, let's say if I'm a liberal I will listen more to the liberal party or you know progressive party leaders. And likewise, when we convey information about climate change, we need to engage conservative leaders, or religious leaders who will consider their ingroup members or ingroup authority members. So, that's the other finding from behavior science is that it's not just the information you're conveying, but it's the messenger who conveys that information that can determine the receptivity of that information.

**Greg Dalton:** Right. So, if a conservative talk show host says this is an apple. Some people will believe it and other people will say oh no, he said it it's not an apple. And if a progressive talk show host says this is an apple some people say yeah, that's an apple. And other people like no, that's not an apple. Just based on who's saying it.

**Jiayng Zhao:** Absolutely. Absolutely.

**Greg Dalton:** Wow. So, how do we talk across differences on climate and other polarized issues? Is it possible to reach someone who's not in our ingroup?

**Jiayng Zhao:** Well, I'm hopeful. I have family members who are very conservative, so I'm hopeful I'm working on them. As I said, you know, I think using the right frames is important. That actually speaks to their motivations and ideologies. Using the right messenger really matters. I think right now we're at a time of extreme polarization and I think we have to be so careful when we communicate climate change or other socially sensitive topics or information to people. We can't just assume that because this hasn't worked with let's say liberals or other people it's gonna generalized everybody. We can't make that assumption.

**Greg Dalton:** Does live the experience matter. Some people will say that the wildfires in the west, extreme flooding events that we're seeing in the west this year, for some people that's like yeah this

is climate change. But for others are they making the connection?

**Jiayng Zhao:** I'm afraid that most people are not making the connection between extreme weather events to climate change. Now I don't blame them. This is because the media is not drawing that conclusion explicitly. And I think that's a huge missed opportunity. I think for people who are aware, for people like me for instance, every time we experience extreme weather in Vancouver, I get really sad because this is just another demonstration of climate change and we're suffering through it. But for most people, they are not drawing that connection. I mean they just see it as, oh, this is just nature this is just what happens. So, I think communicators need to do a better job at maybe take the attribution science approach and deliberately draw that connection and say that snowstorm was, you know, let's say once in a, I mean right now, Peru was going to a once in a lifetime flood, right. I think this is where we, you know, journalists, media can say this is most likely I mean the attributes in the science center will give you the exact statistic it's like this is 80% due to climate change. This is mostly due to climate change. I think we need to draw that connection more explicitly.

**Greg Dalton:** Local weather people are actually one of the few people that conservatives and liberals both watch right. We all watch the weather. That's one of the few people that both sides will listen to. They have a lot of power and they're not connecting the dots on the storm is climate change. So, as we wrap this up, you know, what's the take away about how to talk to people, how to activate change to connect climate and happiness.

**Jiayng Zhao:** I would encourage people to try the workshop, at least adopt the mindset, this new narrative of we need to take actions that make ourselves feel happy and reduce emissions at the same time. We shouldn't just pursue that kind of sacrificial mindset or do kind of the doom and gloom mindset either. I just want to encourage people this is journalists, communicators, educators, policymakers to think about can we improve individual well-being at the same time as planetary well-being.

**Greg Dalton:** Dr. Jiaying Zhao thanks for coming on Climate One today and sharing the possibility that we can be happy and act on climate and be more effective at the same time.

**Jiayng Zhao:** Thank you, Greg, for having me.

**Greg Dalton:** On this Climate One... We've been talking about how to understand and change our behavior to prompt more meaningful climate action.

Climate One's empowering conversations connect all aspects of the climate emergency. To hear more, subscribe wherever you get your pods. Talking about climate can be hard-- AND it's critical to address the transitions we need to make in all parts of society. Please help us get people talking more about climate by giving us a rating or review. You can do it right now on your device. You can also help by sending a link to this episode to a friend. By sharing you can help people have their own deeper climate conversations.

Brad Marshland is our senior producer; Our managing director is Jenny Park. Our producers and audio editors are Ariana Brocius and Austin Colón. Megan Bisciegli is our production manager. Wency Shaida is our development manager. Our theme music was composed by George Young (and arranged by Matt Willcox). Gloria Duffy is CEO of The Commonwealth Club of California, the nonprofit and nonpartisan forum where our program originates. I'm Greg Dalton.