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| | | |
|-------------|-----------------|------------------------|
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|-------------|-----------------|------------------------|

| <i>Papers</i> | Author | Page no |
|--|---|---------|
| Khaled Hosseini, Keigo Higashino and Zoe Ferraris: Social Concealment, Personal Revelation, and Community Guilt | John C. Hawley | 1-16 |
| Android Matters: Apocalyptic Technology and Hegelian Servitude in Ridley Scott's Blade Runner | Rahul C. Gairola | 17-32 |
| Green Purchase Intentions, Collectivism and Materialism: An Empirical Investigation | Kavita Sharma and Chandni Aswal | 33-50 |
| Do MSMEs Engage in Cartels? A Brief Anti-trust Perspective from India | Ashita Allamraju Navneet Sharma Shivans Rajput Meera Nazer | 51-69 |
| Pedagogies in Higher Education: Striding Towards Innovation | Alka Behari and Astha Saxena | 70-89 |
| Decomposition Analysis of the Change in Nutritional Outcomes of Girls between 1992-93 and 2005-06 in Rural India | Sunaina Dhingra | 90-144 |
| Identity Development and Family Relations in Adolescence | Swati Sehgal | 145-154 |
| Diversity, Marginalization and Education | Avantika Mathur | 155-169 |

Khaled Hosseini, Keigo Higashino, and Zoe Ferraris:

Social Concealment, Personal Revelation, and Community Guilt

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ABSTRACT

Detective novels, while generally considered to be pulp fiction and therefore worthy of less academic attention, nonetheless lay bare the reader's interest in getting to the so-called truth. Even the inclusion of "red herrings" and false leads serves to entice a deeper commitment to proving the existence of what "really" happened. They are, therefore, escapist in the sense that they tease readers to reject the underpinnings of deconstruction and post structuralism and allow, at least for the limited duration of the reading, a comforting illusion that there are larger truths that an actual "self" can discern and pin down. This need for structural stability and personal agency carries over into more literary works, though the desire there is generally expressed in the dramatic arc of Freytag's Pyramid: exposition, rising action, climax, falling action, and dénouement.

Keywords: Confession, Secrecy, Guilt, Truth, Empathy

1. INTRODUCTION

In this paper I propose to discuss three popular contemporary novels: *The Kite Runner*, by Khaled Hosseini, generally analyzed as "high" literature with complex characterization, nuanced themes, and lasting importance; and *The Devotion of Suspect X*, by Keigo Higashino (2011),² and *Kingdom of Strangers*, by Zoe Ferraris (2012), which are well-written "beach

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² "South Korean filmmaker Thomas Kim has set up his office in Mumbai to produce digital software for Indian television. Sujoy Ghosh's Te3n was adapted from *Montage* which was produced by Kim and now he is making a web series for Amazon Prime called *Suspect X* which is an adaptation from Japanese author Keigo Higashino's book *The Devotion of Suspect X*. Three films on the novel have already been made in Japanese, Korean and Chinese and now the web series is on its way. Interestingly, Ekta Kapoor had also planned to make a film based

reading” with less pretention to comparisons with canonical literature. We sometimes speak of literature being “serious” because of the depths to which it takes us. “The metaphor of ‘depth’”, writes Peter Brooks, “—see, for instance, the phrase ‘depth psychology’—is a metaphor only, but highly indicative of the sense of something behind the surface, needing excavation. . . . That which is within is at the same time the most important and the most difficult to articulate” (2000: 102). Two of these novels are police procedurals. *Kingdom of Strangers* is the hunt for a serial killer outside Jeddah, Saudi Arabia; *The Devotion of Suspect X* is the hunt for a killer in Japan or, as one reviewer puts it, “The mystery is not who did it, but how it was covered up” (Georgescu, 2013: 318)—the reader, though not the police inspector, knows from the start who the killer is, and gradually learns how someone has helped the killer skillfully cover her tracks. *The Kite Runner*, on the other hand, is something of a Cain and Abel story in which Cain gradually comes to terms with his guilt, and seeks to make amends. Although the three satisfy their readers’ expectations for the genres in which they are written, their authors manipulate “guilt” for decidedly different purposes.

I would like to demonstrate the unavoidable preoccupation with the analysis of personal confession as “true,” or as falling somewhere in the category of “truthiness,” as revealing its place on the spectrum of personal freedom and social obligation and thereby demonstrating its inherent destabilizing potential, and as demonstrating the uneasy role of secrecy, silence, and privacy for the “confessing animal” that must be known but can never be *fully* known.³ Though Foucault (1998) was principally discussing the role of confessing activity on the secular plane, its initial referent remains religious, as described, for example, by Lutheran pastor Dietrich Bonhoeffer. “In confession,” he writes,

the break-through to community takes place. Sin demands to have a man by himself. It withdraws him from the community. The more isolated a person is, the more destructive will be the power of sin over him, and the more deeply he becomes involved in it, the more disastrous is his isolation. Sin wants to remain unknown. It shuns the light. In the darkness of the unexpressed it poi-

on the book and reportedly, acquired the movie rights of the same. Saif Ali Khan was to be in the film directed by Sujoy Ghosh, but now with the web series happening we wonder what Ekta’s plans will be.” (*DNA*)

³ “Insofar as confession can be used to produce and inscribe individuals in discourse – that is to say, by virtue of its ontologically productive capacity – it seems legitimate to claim, as Foucault does, that ‘western man has become a confessing animal’ (McLoughlin).

*sons the whole being of a person. This can happen even in the midst of a pious community. In confession the light of the Gospel breaks into the darkness and seclusion of the heart. The sin must be brought into the light. The unexpressed must be openly spoken and acknowledged. All that is secret and hidden is made manifest. It is a hard struggle until the sin is openly admitted. But God breaks gates of brass and bars of iron. (Dietrich Bonhoeffer, *Life Together*, 1993: 112)*

In this age of “reality” television, Bonhoeffer’s homiletic encouragement to confess one’s sinfulness sounds oddly confident in the power of transformation and even salvation through the mechanism of crass self-promotion and a bread-and-circuses social control. Indeed, one observer of the contemporary scene puts it this way:

If secret confession, to priests and psychiatrists, had a really good record of accomplishment, we should be glad enough to be spared the embarrassment of having the ‘ordinary’ people in our lives know who we are. But that record is not good; and, reluctantly, many people are today experimenting with open confession of one kind or another. When you stop to think of it, secret confession is a contradiction in terms—secrecy is what makes confession necessary. And it is not surprising that the attempt to cope with unresolved personal guilt by means of continued furtiveness does not work out very well. (Mowrer, qtd in Martin, 1975:526)

Facebook’s popularity suggests a human need for ongoing, persistent contact with others, regardless of the superficial nature of the events about which one connects.⁴ Nonetheless, in 2018, a drama played out involving Facebook and Cambridge Analytica, symbolizing the compelling Janus-face of two apparently contradictory but widespread human urges: on the one hand, to be fully known and accepted *in toto* by those who know our deepest secrets and, on the other hand, to maintain privacy and independence from the prying eyes of society, with its cold indictment of one’s human frailties.

⁴ “Self-disclosure on Facebook moderates the relationship between stressful life events and mental health. Facebook disclosure was also positively associated with enacted social support on Facebook, which led to increased perceived social support, enhanced life satisfaction, and reduced depression. SNSs [social network sites], therefore, serve as a promising avenue for delivering health care and intervention. “ (Zhang 1)

Thomas Friedman, the ever-observant columnist for the New York Times, writes that “Today, falling walls and spreading webs. . . are becoming the biggest threat to the success of liberty” (Friedman 2018), and he endorses Dov Seidman’s conclusion that “the same amazing technology that enables people to forge deeper relationships, foster closer communities and give everyone a voice can also breed isolation, embolden racists, and empower digital bullies and nefarious actors” (Seidman, quoted in Friedman). This tension between revelation and concealment, once one notices it, reveals itself as an unavoidable structural element in most narrative development, suggesting that such psychological tension, manipulated with varying degrees of sophistication by authors, remains crucial for creative expression and is one of the most intoxicating reasons that we pick up a novel. On some level, they are all escapist; but one might also argue that on other levels they are pretending to open a window onto something less superficial, something “deeper.” Peter Brooks writes that “the literature of Antiquity often gives the sense of taking place on a single plane (like a bas-relief) as Erich Auerbach famously argued,” but “confessional literature gives the impression of depth and recess, delving into the subject’s past and into the subject’s deepest and most hidden thoughts and wishes, in order to account for the individual self” (Troubling Confessions, 2000: 102).

From an artist’s point of view, where does beauty carve out a niche amid the violence and personal debasement at the heart of the stories under discussion in this essay—that is, how do we consistently find ways to make art from human suffering? Susann Heenen-Wolff and Adeline Fohn (2014), discussing the Jewish “hidden children” of the Second World War, write that what happened to them is “paradigmatic of other situations, such as the genocide in Rwanda, in which the need to construct some form of social cohesion brings in its wake a denial of the trauma to which some people were subjected” (87). Going forward, “acknowledgement of trauma through a social kind of sharing is a necessary condition for activating the healing process” (112). The South African Truth and Reconciliation Commission knew that publicly testifying to one’s ordeal, or confessing one’s complicity in what was done to others, are both necessary components of that healing process. I would argue that, if this is necessary for those who have suffered the trauma, then the creation of that “social cohesion” may be partially enabled by vicarious identification with the “other,” whether that other is the victim or the victimizer, and that the reading of fiction, even pulp fiction, may serve as a laboratory for that strengthening of empathy.

I read all these three novels not as typical “confessional” literature, though each offers a blend of confession and its avoidance. I propose to examine what readers learn of the individual self in situations of long-evaded personal exposure, sometimes abated by an entire society’s complicit blindness to guilt or the ‘true’ self. Afghanistan, Japan, and Saudi Arabia are markedly different societies, and the protagonists of these stories, male and female, find a “voice,” or are forced to “speak” in quite various circumstances. Viewing any society as a neutral surface, imagining the mass of humanity that emerges from subways in any city at the start of any workday, and picturing ourselves as a member of one of these anonymous groups, it is curious to recall the many members of those groups who sped underground, surrounded by others perhaps very much like themselves, but who did their best to avoid contact of any sort during that trip, sometimes by burying themselves in a novel. What does it take to have an individual become visible, to step forward and become silhouetted against that anonymous social backdrop; conversely, how does one avoid detection? Through whose agency, and to whose benefit, does the anonymous step forward into the light?

2. FEMALE REVELATION IN *KINGDOM OF STRANGERS*: “*THEY DIDN’T LET FEMALE OFFICERS OWN GUNS OR DRIVE CARS OR EVEN RIDE BICYCLES*” (259).

The story at the heart of this detective novel is a ghoulish series of dismemberments of women—their bodies buried in the Saudi Arabian desert in the shape of letters to spell out a text from the Qu’ran (“Verily, we have created all things in proportion” –or “in order” [258]). At least one third of the residents of Saudi Arabia are migrants; many are domestic workers who are treated as servants and frequently discriminated against (cf. Human Rights Watch). The “kingdom of strangers” of the title refers to this strikingly high percentage of workers in Saudi who are migrants (and who are the killer’s victims), and Ferraris indicts Saudi society for these many crimes.

But the author has a larger revelation in mind than the confession of a serial killer: she is allowing the inequities of the rigid gender separation of Saudi society to step forward and speak. Thus, the kingdom of strangers is also arguably the two sharply demarcated worlds of men and women, each living side by side but rarely lifting the many veils that separate them. In fact, despite the several interesting characters in the book, the central figure is really “woman,” whether Saudi or foreign. The central violence is not the dismemberment by the serial killer; it is the oppression and erasure of *all* women connected in a desperate web of deception and purdah in the society Ferraris (who resides in San Francisco, but once lived in

Saudi Arabia) describes with devastating effect. In fact, the capture and conviction of the killer is dispatched in a surprisingly few pages near the book's end, as if this was not really what Ferraris wanted to attend to. She then surprisingly concludes with a marriage, as in a classic comedy, in which a conservative male has a conversion to a more liberal view of his fiancée; she had been an assistant to the male detectives who solved the crime and he shared the same concerns that the male detectives did when they considered her doing "their" work: "It bothered him to think of her keeping all of this hidden, but what bothered him more was the realization that she didn't trust him. That she had been concealing her activities at work. That she feared his judgment" (270). But the ending, after all the exposition of the inequities of Saudi society, seems hard to accept as anything other than ironic:

Was he crazy? He'd spent so many years wanting to be married, wanting a wife of his own, children, in-laws, . . . This was a doorway to the world he had never been allowed to enter until now, the world of a woman's voice, her body, her touch. . . . and he told himself that this was what he wanted. . . . She laughed nervously. He squeezed her fingers. They let the sound wash over them as they stood staring, happy and frightened, blinded by the glittering lights. (358-359)

The dynamic at work in such societies is well-described by Christopher Grey and Jana Costas (2016) building on the writings of Max Weber, Elias Canetti, Georg Simmel, Erving Goffman, Michael Taussig, and Eviator Zerubavel observes that "Public secrecy creates a boundary between what is acceptable to talk about and what needs to remain ignored. This serves to cope with social prohibitions, avoid potential embarrassments, yet also to uphold the existing social order" (40). Meanwhile, the artificial boundaries encourage men to be unfaithful to their wives while chastising them for the smallest infringement of prudish codes, and lead the women, such as Katya, the book's protagonist, to have dreams like the following:

It thrilled her to be naked. Naked and outdoors. She thought of all the things she admired about herself: the lovely curve of her hip, the protrusion of her ass, the biceps that were both firm and delicate. It felt as if all her life she had wanted to be seen in her entirety, wearing skin-tight clothing or nothing at all, every curve of her not just showing but seen, admired. It was the worst of sins, this vain pride, but she allowed herself to revel in every moment of it. She woke up happy and embarrassed. (239)

Ferraris has chosen a most appropriate vehicle—murder detection in a very conservative Bedouin society—to convince her readers of the devastating personal effects of “covering,” meaning “actively blocking access to that information supposed to be kept secret by providing other (often contrary) information, for example, through disguising, fabricating, feigning (that is, misrepresenting information), or disinforming outsiders” (42). Her male investigators avoid seeking the help of the female characters, whom they treat as interlopers in a man’s world of crime detection. One of the obvious outsiders is the American woman brought in to advise local detectives on the characteristics of serial killers, but more persistently Ferraris underscores the outsider status of all woman in such a society, even those who reveal themselves as the most clever at solving the crime. “Secrecy,” Grey and Costas (2016) write, “emerges not as a binary between knowledge and ignorance, or silence and speech, but as a spectrum of more-or-less concealed knowledge” (43). This secrecy plays out in various subplots, including one that threatens to totally up-end the main investigation: one of the principal detectives has been carrying on an affair with a South Asian migrant who has gone missing. He tries to investigate her disappearance while covering up his affair, lest he be revealed as an adulterer and therefore subject to beheading. Behind the literal veils are plenty of other secrets, including the pre-marital pregnancy of one of the apparently most devout young women.

The reader is intrigued by the contortions through which Ferraris puts her various investigators as they put these arbitrary social barriers between them and the solution to the crimes at the heart of the story. It gradually becomes clear that secrecy, extended to the degree of national neurosis, is the real topic for this novelist. As Chilson (2014) notes, “secrecy, above all, separates. . . . Even if somehow outsiders learn a secret, refusing to speak with them about it creates social distance between the concealer and those from whom they conceal. . . . In addition to creating social distance it also creates conceptual distance. Labeling an idea, practice, or object as secret conceptually sets it apart from that which is not secret” (xi). The persecuted foreigners are ignored by the majority who are happy to employ them or enslave them; they just disappear in the novel, with no one there to observe their absence from society. But similarly, Saudi men and women remain invisible to each other, and do all they can to maintain that invisibility. They are, in effect, strangers not only to each other, but also to themselves.

Since the novel is written for western readers, one might accuse Ferraris of orientalism, ‘othering’ Saudis more than is justified. But Brooks’s (2000) study of confessions (judicial and otherwise) suggests how unmodern the Saudi world is: he writes of “the story of the autobiographical impulse in literature, and its rise to dominance” (103), but that concept seems

foreign, indeed, to the World Ferraris describes in her work. One can't imagine the exposure of the individual to social scrutiny that is implied in telling one's own story in a public forum that has typified our own age. In the west, such a Rousseauvian autobiographical impulse is strongly encouraged. Building on Foucault, Brooks observes that "the modern subject is held responsible for the discourse of his or her own identity and personality, and we tend to regard that discourse as privileged information. We may question it, we may find it self-glorifying or self-excusing, we may search for errors of fact in it, yet we regard it in its own terms—precisely, as a confession—true to the self in ways that other discourses never can be. . . . We are held responsible for what we say about ourselves" (110-111).

3. FALSE CONFESSION AND WILLFUL BLINDNESS IN *THE DEVOTION OF SUSPECT X*: "AS LONG AS THEY COULDN'T PROVE ISHIGAMI'S CONFESSION FALSE, IT WAS IMPOSSIBLE TO STOP THE LEGAL PROCEEDINGS" (296).

Veteran spy novelist John LeCarré begins his 2017 novel, *A Legacy of Spies*, as follows:

In any interrogation, denial is the tipping point. Never mind the courtesies that went before. From the moment of denial, things are never going to be the same. At the secret policeman level, denial is likely to provoke instant reprisal, not least because the average secret policeman is more stupid than his subject. The sophisticated interrogator, on the other hand, finding the door slammed in his face, does not immediately try to kick it in. He prefers to regroup and advance on his target from a different angle. (LeCarré, 1)

This observation of the interrogators and the cat-and-mouse game that clever spies can spin out, sometimes successfully, nicely summarizes the dramatic structure of Higashino's tale of a false confession that is used to save a woman and her daughter from a conviction for a crime they did in fact commit: the killing of the woman's estranged husband (though in self-defense). The victim is Togashi, who is knocked unconscious by his daughter, Misako, and then garroted by his ex-wife, Yasuko. It sounds garish, but it was in response to Togashi's discovery of the whereabouts of Yasuko and her daughter, who had fled from him before, and to his violent attack on the two women and threat to never leave them alone again. The intrigue becomes more interesting, though, when their next-door neighbour, a mathematics teacher with a crush on Yasuko, decides to cover up the crime and confuse the investigating officers. Ishigami reasons as follows: "*I have to protect them*, thought Ishigami. He would never be this close to so beautiful a woman ever again in his life. He was sure of that. He had to summon

every last bit of his strength and knowledge to prevent any calamity from happening to her” (36). And so he sets in motion an elaborate diversion, while providing the two women with a fool-proof alibi. His plot seems to be working, even though he is up against an old college friend, a brilliant physicist who knows Ishigami’s ability to plan many steps ahead of any proposed investigation.

Ultimately, though, it collapses when Yasuko decides she cannot live without confessing what she has done: “It was so hard to hide the truth. Would she ever really be able to be happy, with something so dark hidden inside? She would have to live the rest of her life with this guilt, never knowing true peace. *But maybe*, Yasuko thought, *enduring that guilt is a way of doing penance*” (288). Ishigami turns that reasoning on its head. If Yasuko’s impulse it to be fully known, his is to completely cover what is going on inside. She considers his sacrifice for her: “She had never encountered such deep devotion. She hadn’t even thought it existed. Yet Ishigami had it, hidden away beneath that expressionless mask of a face—the kind of passion unfathomable to the average person” (287-288).

But he sees it all quite differently. As a mathematician he is content to live in his head, working on a mental problem for years and years, and never certain that he will reach a conclusion. Incarceration will not change much for him, since the external world is almost a distraction from the important life that is going on behind that “mask.”

Who cared if he wasn’t allowed to leave his room? As long as he had paper and something to write with, he could work on his math problems. Even if the authorities were to bind his hands and feet, he could explore new proofs in his head. They could take away his sight, or his hearing, but they could not touch his brain. Confinement was like a limitless garden of paradise for him. How short a lifetime is, he thought, compared to the time it will take humankind to find all the rich veins of mathematical ore where they lie sleeping and tease them forth into the world. Nor, he reflected, did he need anyone to acknowledge his work. (289-290)

The plot might seem to be a perfect exemplification of one of Peter Brooks’s observations that “the institutionalization of confession as a means of legal conviction nonetheless must always make us uncomfortable, since the state in search of a confession plays on the consolatory aspect of confession as a means to entrap for disciplinary purposes” (112). But

when one has made the life of the mind so important that one's embodied life becomes a neurotically private and artificial work of performance art, a false confession like Ishigami's unsurprisingly is used by him to cover the actual murder he has committed to cement the false confession. In a country notable for its *shōji* and implied compact to not see or hear what one actually sees or hears, and with some of Asia's oldest data protection laws (Lovells), Keigo Higashino's provocative twist on the *shoji* his protagonist erects around his interaction with the world suggests the dangers of warding off one's guilt by mocking the very idea of confession. Obsession of any sort clouds one's vision.

Clever though he is, Ishigami meets his match in his old college friend and intellectual rival, physicist Yukawa. He surprises one of the detectives by injecting the notion of intuition into the proceedings:

Yukawa slowly turned around to face Kusanagi. "That's what you think as a detective. I asked whether you believe him. I don't care about your investigation."

Kusanagi nodded and sighed. "To be honest, it doesn't feel right. There are no holes in his story. It all makes sense. . . . Aren't scientists supposed to shelve their doubts in the face of logical arguments. . . . I thought you were all about facts over feelings."

Yukawa shook his head—a barely perceptible movement—then came to sit down across from Kusanagi. "The last time I met Ishigami, he presented me with a mathematical conundrum," he said. "It's a famous one, the $P=NP$ problem. Basically, it asks whether it's more difficult to think of the solution to a problem yourself or to ascertain if someone else's answer to the same problem is correct. . . . There are some things in life that we have to accept as truth, even though we don't want to believe them. . . . "He's chosen this, he said at last. He's chosen to spend the rest of his days in prison." (251-253)

Yukawa later explains Ishigami's logic to Yasuko, the woman Ishigami is attempting to save:

"I want you to know that you know nothing of the truth."

"That's true. I'm not lying. But why did you have to tell me that?"

“Don’t you find it odd that you haven’t had to lie? That the police have gone so easy on you? See, Ishigami put it together so you would only have to tell the truth. . . . His entire plan was constructed around that commitment. . . . That’s why he cut off his own path of retreat—so he would never be able to turn back once things were put into motion.” (270-271)

In an odd coincidence, reminiscent of the migrant household workers that were the serial killers targets in *Kingdom of Strangers*, the individual whom Ishigami chooses to kill as part of his plot of deception is a homeless man that he had passed on his way to work every morning. Ishigami “would kill someone else and then make the corpse look like Shinji Togashi”; as Yukawa explains, “It’s not unusual in their world [that of the homeless] for people to just go missing” (274). Shinji/ shoji—not quite homonyms, perhaps, but subliminally effective as paper-thin barriers to the truth.

4. GUILT AND REFORMATION IN *THE KITE RUNNER*: “*THERE IS A WAY TO BE GOOD AGAIN*” (168).

John LeCarré offers a good entry point into this emotionally charged novel. In an interview for National Public Radio he offers this interesting exchange with Terry Gross:

Terry Gross: Was it ever hard for you to figure out who your authentic self was?

LeCarré: Writing did that for me. . . . I think the—the incentive to write and the environment of the secret world, this—this theatre of human behavior that had been—been offered to me, it was really like a sort of coming home. Not coming home into the secret world, but coming home recognizing the chance that had been given to me. And I felt that I could make out of this extraordinary little—this microcosm of human behavior something that applied to all of us because we, all of us, deceive ourselves and other people in our daily lives in small, harmless ways, sometimes harmful ways. We deceive our bosses in small, harmful ways or harmless ways. Everybody lives in some kind of condition of secrecy, out of politeness to a great extent. If you’re living with somebody, you swallow your emotions and you control yourself and you watch yourself in order to make the relationship work. And the other person is doing the same stuff. And I think, therefore, that there was for me always a universality in the secret world that I could—I could exploit and write about and apply to the general human condition in which we live. (Gross, 18)

Is LeCarré answering Gross's question? Is he explaining how he figured out who his "authentic self" is? Or is he implicitly denying Gross's premise that there actually exists an authentic self to be discerned, suggesting instead a more deconstructive idea that demonstrates how inaccessible a "self" must remain, and how one can never imagine there is some "true" center to the onion that is the personality?

In any case, the points he is raising regarding self-deception and the well-practiced methods most of us use to maintain an acceptable face for the world are a fitting backdrop against which Hosseini's protagonist (Amir) comes to terms with his own complicity in the death of his half-brother. It becomes clear early on in this melancholy reminiscence of childhood in Afghanistan, observed from the comfort of Silicon Valley in full adulthood that Hosseini is engaged in a recuperative act of detective work: whatever became of the companion, Hassan, whom he sacrificed 26 years earlier to ethnic violence?

Of the three novels under discussion, this is the one most clearly aligned with Dietrich Bonhoeffer's call for living an authentic life. As one Christian writer controversially argues, "The problem is *guilt*. Depression, anxiety, hostility, fear, tension and, in more serious cases, psychosis are really ailments of the conscience—symptoms that result from violating the conscience's promptings and refusing to live honestly and responsibly" (Martin, 1975, 525). Martin's views are echoed by Wilkes (2014), who concludes that "In [Bonhoeffer's] 'The Best Physician' address we come to understand that in [his] view confession of sin may also lead to physical revival through the psychosomatic process of the healing of the body as a result of confession. Healing and salvation are linguistically, theologically, and existentially intertwined in Bonhoeffer's thought" (Wilkes, 67-68).

These insights eventually prove to be true for the protagonist in *The Kite Runner*, but they are especially striking because of the undeniable physical results brought about by Amir's entry into guilt, involving abduction, male-on-male rape, betrayal by Amir, the acceptance of false accusations of guilt by Hassan, murder, and attempted suicide. Amir's family are Pash-tun, but Hassan's are from the minority Hazara. Amir's complicity in the evil around him is compounded by Hassan's generosity toward this man who, we learn, is actually his half-brother. Brooks writes that, in Dante's *Divina Commedia*, "the sinners must speak for themselves, in their own confessional discourses" (97), but that is a long time coming for Amir. Learning the full history of what happened when he abandoned his friend in their childhood,

“Amir is filled with shock and horror. . . . ‘I’m thirty-eight years old and I’ve just found out my whole life is one big fucking lie!’” (195).

In the closing chapters of the book, as happily-married Amir seeks to adopt now-dead Hassan’s son, Sohrab, Amir recognizes the effects of his unacknowledged guilt playing out in an eerie repetition in Sohrab’s fate.

. . . in America, you don’t reveal the ending of the movie, and if you do, you will be scorned and made to apologize profusely for having committed the sin of Spoiling the End. In Afghanistan, the ending was all that mattered. . . . If someone were to ask me today whether the story of Hassan, Sohrab, and me ends with happiness, I wouldn’t know what to say. Does anybody’s? After all, life is not a Hindi movie. (311-312)

Indeed, the ending tries to assert the possibility of hope, with Amir symbolically taking on the role of kite runner than had belonged to Sohrab’s father. But Sohrab, now traumatized and mute, can only muster an enigmatic half-smile in response. In this novel, there is no Bollywood dance number to clear away the vestiges of guilt, even after it has been acknowledged.

The narrative is shot through with flashbacks, serving as structural reminders that guilt reasserts itself and in fact deepens upon further reflection. Midway through the novel, Amir runs a film in his head that he never saw in real life:

I kept thinking of that day in 1974, in the hospital room, just after Hassan’s harelip surgery. Baba, Rahim Khan, Ali, and I had huddled around Hassan’s bed, watched him examine his new lip in a handheld mirror. Now everyone in that room was either dead or dying. Except for me.

Then I saw something else: a man dressed in a herringbone vest pressing the muzzle of his Kalashnikov to the back of Hassan’s head. The blast echoes through the street of my father’s house. Hassan slumps to the asphalt, his life of unrequited loyalty drifting from him like the windblown kites he used to chase. (192)

This, then, is as close to the “authentic self” as Hosseini’s protagonist comes, and his narrative account of how he got there, seemingly a happy and self-confident man in Silicon

Valley, reminds readers that one never knows what truths lie behind the passive, perhaps pensive, facades of those around us on the train.

5. CONCLUSION

Critics and readers alike tout the reading of fiction as a safe and enriching vehicle to vicariously live many lives and, in the process, perhaps nurture our capacity for empathy. On that latter score—the nurturing of empathy—there has been significant controversy (see, for example, studies by Peter Bazalgette, Seán Williams, and others). As a testing laboratory for the exploration of what humans will accept as truthful, though, there will be less controversy. Similarly, the psychology of covering the truth in entire social systems can be well-displayed in fiction that offers an external (perhaps a bit naïve) “reading” of those systems. This essay has looked at three recent novels to suggest the complex interaction between confession, secrecy, and guilt to question the stability of what we may too comfortably accept as true.

REFERENCES

- Anon. (2017). "A Web Series Based on *The Devotion of Suspect X*?" *DNA* 7 June 2017. <http://www.dnaindia.com/bollywood/report-a-web-series-based-on-the-devotion-of-suspect-x-2463569> Accessed 26 March 2018.
- Bazalgette, P. (2017). *The Empathy Instinct: How to Create a More Civil Society*. London: John Murray Publishers.
- Bonhoeffer, D. (1993 [1939]). *Life Together: The Classic Exploration of Faith in Community*. San Francisco: Harper.
- Brooks, P. (2000). *Troubling Confessions: Speaking Guilt in Law and Literature*. Chicago and London: University of Chicago Press.
- Chilson, C. (2014). *Secrecy's Power: Shin Buddhists in Japan and Contradictions of Concealment*. Honolulu: University of Hawaii Press.
- Ferraris, Z. (2012). *Kingdom of Strangers*. New York, Boston, London: Back Bay Books / Little, Brown and Company.
- Foucault, M. (1998). *The Will to Knowledge: The History of Sexuality Vol.1*, trans. Robert Hurley. London: Penguin.**
- Friedman, T. (2018). "How Marc Zuckerberg can Save Facebook—and Us." *New York Times* 27 March 2018. <https://www.nytimes.com/2018/03/27/opinion/zuckerberg-facebook-digitalbullies.html?action=click&pgtype=Homepage&clickSource=story-heading&module=opinion-c-col-left-region®ion=opinion-c-col-left-region&WT.nav=opinion-c-col-left-region> Accessed 28 March 2018.
- Georgescu, I. (2013). "Perfect Crime, Non-Perfect Crime." Rev. of *The Devotion of Suspect X*. *Nature Physics* 9 (June): 318.
- Gross, T. (2017). "Novelist John LeCarré Reflects on His Own 'Legacy' of Spying: An Interview with Terry Gross." National Public Radio 5 September 2017 <https://www.npr.org/programs/fresh-air/2017/09/05/548666363/fresh-air-for-september-5-2017> Accessed 26 March 2018.
- Grey, C. and J. Costas. (2016). *Secrecy at Work: The Hidden Architecture of Organizational Life*. Stanford: Stanford University Press.
- Heenen-Wolff, S. and A. Fohn. (2014). "Secrecy and the Denial of Trauma." In: *Hostile and Malignant Prejudice: Psychoanalytic Approaches*, ed. Cyril Levitt. London: Taylor & Francis/Karnac Books: 87-116.
- Higashino, K. (2011). *The Devotion of Suspect X*. Trans. Alexander O. Smith. New York: Minotaur.

- Hosseini, K. (2003). *The Kite Runner*. New York: Riverhead.
- Human Rights Watch. (2018). "Saudi Arabia." <https://www.hrw.org/middle-east/n-africa/saudi-arabia> Accessed 30 March 2018.
- LeCarré, J. (2017). *A Legacy of Spies*. New York: Viking.
- Levitt, C., ed. (2014). *Hostile and Malignant Prejudice: Psychoanalytic Approaches*. London: Taylor & Francis/Karnac Books.
- Lovells, H. (2017). "Changes in Japan Privacy Law to Take Effect in Mid-2017; Key Regulator Provides Compliance Insights." *Lexology* 1 February online <https://www.lexology.com/library/detail.aspx?g=efa0a2b0-b73e-456c-b4fa-26a268e9e751> Accessed 3 April 2018.
- Martin, P. (1975). "Sin, Guilt and Mental Health: Confession and Restitution as Means of Therapy." *The Christian Century* 21 May: 525-527.
- McLoughlin, J. (2016). "Foucault, Sexuality, and the 'Confessing Animal.'" *Sonder Magazine* 2 September online <https://sondermag.wordpress.com/2016/09/02/foucault-sexuality-the-confessing-animal-josh-mcloughlin/> Accessed 31 March 2018.
- Raza, S. (2016). "*The Kite Runner*: Children, Violence and the Ethnic Imaginary in Afghanistan." In: *Children and Violence: Politics of Conflict in South Asia*, ed. Bina D'Costa. Cambridge and London: Cambridge University Press: 84-101.
- Seidman, D. (2011). *How: Why How We Do Anything Means Everything*. Hoboken, NJ: Wiley.
- Vosloo, R. (2006). "Body and Health in the Light of the Theology of Dietrich Bonhoeffer." *Religion and Theology* 13.1: 23-37.
- Wilkes, N. (2014). "Life and Health: Bonhoeffer's Normative and Divergent Accounts of Private Confession of Sin." *Theology Today* 71.1: 58-68.
- Williams, S. (2017). "Empathy? Not in My Book." *Times Higher Education* 8 June online <https://www.timeshighereducation.com/opinion/empathy-not-in-my-book>. Accessed 4 April 2018.
- Zhang, R. (2017). "The Stress-Buffering Effect of Self-Disclosure on Facebook: An Examination of Stressful Life Events, Social Support, and Mental Health among College Students." *Computers in Human Behavior* 75: 527-537.

Android Matters: Apocalyptic Technology and Hegelian Dystopia in Ridley Scott's *Blade Runner*

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ABSTRACT

This essay critically evaluates the present moment of representation in social media of various subjects by looking back and interrogating past representations of technology and otherness in Hollywood cinema. Specifically, I argue that Ridley Scott's cult classic film *Bladerunner* (1982) offers us a window into thinking about technology-as-other as portrayed in a historical moment that charted out the rise of neoliberalism under Ronald Reagan in the USA and Margaret Thatcher in the UK. I draw on G.W.F. Hegel's theorization of human subjectivity and power relations in his master-slave dialectic to analyze the relationship between humans and synthetic androids, also known as replicants, in the film. In engaging Hegel's analysis of power and servitude, I reveal myriad discourses of gazing that structure power not only within the narrative of the science fiction film, but moreover between the audience and the images. I conclude that the network of gazes between androids and humans highlight the ways in which human consciousness too is fabricated as well as mediated in and through the other(s).

Keywords: Hegel, Android, *Blade Runner*, Dystopia, Servitude, Masculinity, Technology

Perhaps more than ever before, global movements for social justice that center around race and gender, like hashtag activism movements including #MeToo and #BlackLivesMatter, have proliferated from technologies that pundits predicted would fail in the wake of a Y2K holocaust 18 years ago. Indeed, when we reflect upon it, national identities from India, the

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USA, and the nations in between seem over determined by doomsday scenarios characterised by technological innovation. Technology seems ubiquitous, and punctuates daily life in tacit ways that normalize the most mundane moments in which we take for granted the electronic and cybernetic hands that guide us so. In meditating on how past representations of apocalyptic technology have shaped the ways in which we think of science fiction film, humanities computing, and what is now called “digital humanities” today, I want to open with a historiographical query. In seeking a panoramic view of these social movements and technology today, I want to ask: how did we arrive at a moment when Facebook is globally scandalized and the 1% deploy technology to secure global capital? More specifically, how have representations of technology during the rise of neoliberal capitalism portrayed technology, gender, and race?

This question is especially important today when we excavate the daily ways in which technology reveals and/ or conceals human identities. As I have elsewhere argued, even diasporic sexualities are worth examining in the representation of digital media (Gairola 2018, 55). Reflecting back upon American cinematic productions that depict the future, for example, there appears to be a conflation of global dystopia with the so-called Third World though, predictably, through a hegemonic lens of heteronormative, white male privilege. This lens seems to produce identification with certain audience members that necessarily indexes racial affiliation while it solicits, even in its over determined, spectacular fiction, a particular return gaze of the audience. This visual transaction is akin to Louis Althusser’s famous notion of “interpellation” wherein a police officer “hails” a person in the street, thus confirming his/ her “fixed residence” or designation in the world (Althusser 2001, 121). Seeking to move beyond Karl Marx’s conceptualization of base and superstructure as the ultimate vertical horizons of human experience, Althusser outlines the interlinked societal mechanisms that deploy ideas or force to naturalise assimilation. Interpellation is self-recognition at the same time that it demarcates human subjugation beneath the sign of assimilation into a proper order – be it gender, race, class, caste, nationality, sexuality, religion, colour, creed, etc.

The interpellative act in a cinema hall, rather than on the street, occurs when the images can retain representational authority over audience members where the depictions become larger than life rather than simply imitating life. Identification occurs precisely where “visibility is a trap” (Foucault 1979, 200). In the case of Ridley Scott’s magnum opus *Blade Runner* (1982), identification with a character amounts to disidentification with the world. The film is arguably the forerunner of a long line of subsequent films including *Short Circuit* (1986), the *Transformers* franchise (2007 – 2017), and the recent, its sequel *Blade Runner 2049* (2017),

and African American superhero film *Black Panther* (2018). Such science fiction films are timely interventions in social politics on the silver screen that indict the profit and destruction motivations of technology in the wrong hands. Scott's film braids together robotic masculinities with white servitude, portraying as a viable option migration to the "off-world colonies" (Scott, 1982). This gaze of recognition ensconces a moment of internalized otherness that, like traditionally racialized, queered and pathologized deviants, fixates on futuristic androids. This pathologization of android subjects is particularly evident during the rise of neoliberal Reaganomics in the U.S.A. and Thatcherism in the U.K. that influenced the liberalization of the market in India about a decade later.

Scott's *Blade Runner* appears to speak directly to Reaganomics' "trickle down" view of the global market in a dystopic future swamped by acid rain and Asian labourers. In this dark vision of Los Angeles, technological hybrids of the future are part human and part technology wherein they are superior to humans in stamina as machines yet far inferior to humans for lack of pathos. Against the backdrop of this dark dystopia, Deckard (Harrison Ford) is a "blade runner" of the Los Angeles Police Department (LAPD) whose job involves "retiring" formidable androids that have been produced by the almighty Tyrell Corporation. The company produces these super-human androids, some of which display some emotional capabilities (that serve as major themes structuring plot). These androids, which humans refer to as "replicants" and, in a pejorative sense, "skin jobs," serve as historical citations for us today that illustrate how the robotic other was imagined in 1982 along with the filmic techniques that underscore these representations. An added irony here is that Deckard himself is a replicant, as we learn at the end of the film, while simultaneously serving as a violent agent of the dystopic city's pogrom of transgressive, cybernetic forms.

As such, *Blade Runner* espouses the sentient goodness of some characters that are technological products of the surgically hubristic Tyrell Corporation. Yet, on the other hand, its marketable androids are the target of human xenophobia wherein, paradoxically, their technological sophistication marks them as savage, subhuman, other. We have seen this familiar pattern also in the *X-Men* franchise, most recently in the film *Logan* (2017). As I will further demonstrate, the construction of these fraught others, which at once represent the future and the inhuman, is proportional to the special effects and film technique invested in visualizing the evil "nature" of non-human harbingers of a digitalized and metallic destiny that marks doomsday for the human race. Despite their technological innovation, replicants are nonetheless beholden to sentient humans that are "weaker" given their composition of flesh and blood

despite containing souls. These androids are, in other words and *other* worlds, akin to Shakespeare's Caliban from *The Tempest* (1610), or Mary Shelley's monster from *Frankenstein, or The Modern Prometheus* (1818), non-flesh mendicants whose human counterparts fear and revile. Filmic versions of this menace that are contemporary to *Blade Runner* include *Re-Animator* (1985), *Pet Sematary* (1989), and *Frankenstein Unbound* (1990).

Such popular mistrust of corporate innovation in film narratives from the early 1980s into the 1990s is a veritable reflection of global economic policies at that time while foreshadowing darker times to come. The rise of cultural studies in the 1980s carefully excavated the ways in which visual representations forged manipulative identificatory relationships with viewers. This shows us that filmic narratives reflect the critiques of cultural artifacts that depict the complexities of skewed power relations and resistance to oppressive mechanisms of society as we tangibly live it. For Todd McGowan, "science-fiction cinema...[allows us] to see ideology in a way we would not ordinarily see it" (McGowan 20). These new ways of visualizing ideologies by extension also create new ways of identifying with the characters on the big screen, even as the filmic narrative portrays them in the future or past. These identificatory relationships and unique configurations of android figures as all-powerful subjects arguably articulate in the realm of apocalyptic visions some philosophical traces of Hegel's key ideas.

Famous for his notion of idealism that accords complete agency to human sentience in opposition to Karl Marx's materialist conception of history, Hegel's master-slave dialectic here offers us a lens for rethinking species of technological others and symbolic acts of gazing. In *Phenomenology of Spirit* (1807), Hegel describes a reciprocal process in which two subjects encounter on another, both emanating a distinct consciousness. For Hegel, the master is a subject who holds a consciousness that "exists for-itself," the slave is that subject whose consciousness is structured around "existence-for-an-other" in relation to the master (57-8). That is, a being's self-consciousness only attains enlightened knowledge upon recognizing the self-consciousness of another, and this psychic transaction can be profound and traumatic. In other words, one's recognized differences in the other have always already invoked one's similarities with the other and thus existence and power is constructed around subjectivity and the conscious recognition of it. Hegel details the nuances of this when he writes, "On approaching the other [slave] it [the master] has lost its own self, since it finds itself as another being; secondly, it has thereby sublated that other, for this primitive consciousness does not regard the other as essentially real but sees its own self in the other" (Hegel 1977, 111).

This is to say that the master-slave relationship balances itself upon a mediated gaze: the gaze of the slave *as reflected back to him/ her by the returned gaze of the master* reformulates the dependence of the slave on the master for the master's very life is at stake only in and through the existence of the slave. Likewise, the master engages in an "existence-for-self that is for-self only through-another" (58) as a necessity since s/ he too requires a subject against which his/ her own consciousness is juxtaposed and thus realized. Consciousness exists by itself only in so far that it can be recognized as such, and thus the recognizing consciousness wields a kind of cryptic power in subordination since its very existence makes possible the position of the master that lords above the slave. Yet what is mediated in this dynamic is the raw level of animality that one or the other can accord to its other in the interest of wielding "the greater" power. Here, we get to the root of Hegel's master-slave dialectic that can give insight into the apocalyptic visions of the future depicted in the film. In *Bladerunner*, this reciprocal transaction of recognition is fraught because weaker humans symbolically castrate the more sophisticated machine, who is nonetheless haunted by fabricated memories and dreams. These psychic components always remind androids that they are merely "replicants," or bad copies, of humans that will never possess a soul despite having better looks and endurance than humans.

This reciprocal and constitutive self-consciousness that exists in and through the eyes of the other as obscurely described by Hegel appears in black theorizations of difference, including the racialized relationships in the power dynamics of colonialism described by Franz Fanon (Fanon 1967, 62). Cinema imbibes, like a hall of mirrors, a network of gazes that are exponentially manifest as characters view one another, as viewers gaze upon them through mediated POVs (point-of-view shots) of the kino-eye. The gazes and return-gazes in the film construct doomed visions of the earth through technologies that contradict Hegelian idealism but underscore Marx's worst nightmares of capitalist innovation. In "Virtual Bodies and Flickering Signifiers" (1990), Katherine Hayles observes, "It is no accident that the vaguely apocalyptic landscapes of films such as *Terminator*, *Bladerunner* [sic] and *Hardware* occur in narratives focusing on cybernetic life-forms. The sense that the world is rapidly becoming uninhabitable by human beings is part of the impetus for the displacement of presence by pattern" (36-7). Hayles' larger project here operates under the assertion that presence has given way to pattern and randomness in postmodern movements of the twenty-first century, which films like *Tron* (1982), *The Lawnmower Man* (1992), and *The Matrix* (1999) depict through computerized graphics and imagery.

However, I am particularly interested in Hayles' critical contention because it presents a quagmire when using a Hegelian lens to read android figures in *Blade Runner*. If, as Hayles suggests, the earth is uninhabitable and there is no reason to live in these films that render Los Angeles uninhabitable, then why should there be any stakes at all for its human (master/ maker) and android (slave/ creation) inhabitants? That is, if the slave exists in relation to the master's existence and its own non-threatened life as the master's subject, can the Hegelian dialectic apply to android-human relationships? I would suggest that this very discrepancy, the urgency of the android to live in a world that is essentially doomed, fleshes out the applicability of the Hegelian dialectic even in the futuristic face-off between man and machine, given man's assumption that the human shall always out-live the inhuman. To put this another way, the battery will always wear down, and where the power source does not would be the cause of great anxiety indeed as machine becomes the master of man. This anxiety indeed drives the plot of *Blade Runner*, and perhaps also partly explains why there is so much negative insinuation embedded around "skin" when humans pejoratively refer to replicants.

Yet in addition to compelling the audience to critically interrogate the androids' loyalty to humans, the film also problematizes that which perhaps most defines humans – the ability to have their own memories. For as McGowan notes, the Tyrell Corporation designs Deckard's memory implants to purposefully fool him into thinking he is human, thus exposing "the ideological nature of memory itself" in the film (McGowan 2009, 26). In addition, there is always the fear that our own creation of a prodigal form of technology may efface the human race but find, through the superior brilliance bestowed upon it by a human, a means to survive mechanically while the earth as an organic whole begins to wilt due to nuclear war, global warming, etc. As Michel Foucault has noted, one technology of society that ensures procreation of economy is the institution of marriage underpinned by heteronormative romance (1990, 36-37). Marriage as such promotes a disciplinary function of the nation state in the manufacture of docile bodies to constitute a "democratic citizenry." While Scott's 1982 film only touches upon this theme, *Bladerunner 2049* (2017), the former's sequel, moves in this direction by blurring the boundaries that divide human and machine, while emptying out reproduction's need for amorous sex or kinship relations based on blood and caste.

However, Deckard and antagonist Roy Batty (Rutger Hauer), a replicant which Tyrell himself designs as the epitome of racialized masculinity, both inhabit spaces outside of human law and matrimony in the first film. Marriage here is key since it is the nexus as which humanity, love, and reproduction cohabit and allow flesh and blood humans to produce memories

together rather than singularly. Deckard and Roy's existence as master and slave, hunter and hunted, consequently pose a threat to these societal institutions because they symbolize the evolution of non-human reproductive possibilities beyond blood kinship and the obliteration of the line that divides the human from the android. The stakes for these androids are high in the context of Hegelian dialectics for the destruction/ mutation of the earth does not equate to death, thus its consciousness *is* and *is not* dependent on the human/ master. In other words, while android/ slave (also creation) requires the human/ master (also creator) to affirm its existence at some level, it is the *life of the master* that becomes threatened by the presence of the android/ slave. That is, the precarious state of life inverts on the very pivot that one demarcated the line between man and machine.

In *Bladerunner*, the hunted replicants (androids) become rogue hunters against the backdrop of a Third World mash-up of Asia and Central America. As Lisa Lowe puts it, "In *Blade Runner*'s version of the 21st century, it is no longer necessary to travel out to see 'the world': 'the world' has come and now inhabits, indeed possesses, Los Angeles" (Low 1996, 84). The dystopic sheen of the future is waxed heavy by a Third World future in which androids/ slaves, or "replicants" as the protagonist Deckard calls them, seem to fit right in. That is, cybernetic criminality and servitude seem befitting to this version of Los Angeles as the Third World while rich citizens await migration to the "off-world colonies." Perhaps this inclusion among humans is the resultant success of Tyrell's motto of "More human than human" (Scottt, 1982). The proud father of the Aryan-looking Nexus 6 model Roy, Tyrell faces his creation towards the end of the film when Roy approaches him in search of "more life" after learning that the Nexus 6 models all have a built-in shelf life.

Here, the master/ slave dialectic visually plays out between the intensities of the two characters mutual gazing as mediated to our own eyes through the kino-eye of the camera, overlapping the tropes of looking. Scott tightly frames this sequence but utilizing close-shots that highlight the anxiety produced by this exchange: Tyrell brushes Roy's head while urging him to "revel" in his time, and Roy draws him close and plants a kiss on his lips. Against the backdrop of flickering shadows and candlelight, Roy forces his thumbs into the struggling man's eyes, killing him by blinding him. Scottt heightens the anxiety of this telling moment by framing the entire sequence in extreme close shot-reverse shots between Roy and Tyrell with close shots of an artificial owl, eyes glowing in the dark, and horrified Sebastian witnessing the murder. This scene presents a complex of gazes ricocheting within the scene, mediated by the eye of the camera and filtered through our own. This network of gazes, with the exception

of Roy's, absorb the fear that has been displaced on them from the "retirement" of the subject as object of that gaze. Like the homoerotic/ incestuous thrill shared for a moment between the creator and his creation, the film medium sends ripples of this same thrill through viewers as the shock of taboo becomes a visual adhesive that transfixes viewers.

Perhaps this is the potentially negative aspects of the current "real time" that we consumers live in. In "The Ecstasy of Communication" (1983), Baudrillard has complained that flat, non-reflective surfaces that profoundly affect the reticent consumer have taken over "truthful" (read as "metaphysical" in my context) sign systems. He writes, "The subject himself, suddenly transformed, becomes a computer at the wheel, not a drunken demiurge of power. The vehicle now becomes a kind of capsule, its dashboard the brain, the surrounding landscape unfolding like a televised screen (instead of a live-in projectile as it was before) (127). While Baudrillard's implication in this piece is that technology as such is a "bad thing," I would offer that the very problematic aspects of technology also provide the amenities of it that we love so much. Returning to the notion that Ridley displaces on viewers the homoerotic/ incestual anxiety between Roy and Tyrell just before the latter's death, viewers may enjoy the fantasy of this sequence but never indulge in one like it or ever have the opportunity to. If film was not one such capsule capable of transforming the brain into a dashboard, what would be the point? Would the signification of the formal aspects of the sequence (extreme close shots with darkly lit backgrounds) hold any ground without the displacement of anxiety and emotion?

My sense is that such displacement of anxiety and emotion is necessary to remotely enjoy science fiction noir films though its existence would trouble Baudrillard since this implies (like romantic relationships between cyborgs and humans) that humans can establish an audiovisual cathexis with an inorganic and/or unnatural entity. For we are staring into an unflinching abyss of images in which we identify aspects of our own subjectivity. The troubling anxiety emanated from the murder of Tyrell arises from our witness of the death of the master by the hands of the slave, who has used the life given to him to kill its creator. Since there is no life to be had and the master himself is expendable, suddenly he occupies the slave-as-object position as commodity to be fetishized in relation to the configuration of his equally dependent subjectivity. But without the loaded "return gaze" of the co-subject, Roy is no longer dependant on the creator he once thought could supply him with more life -- the master who "exists-for-itself" no longer exists for anything in death as the slave finds that the "existence-for-an-other" also dies along with the master. Perhaps this is why Roy kills his maker by

gouging out his eyes, which betray the synthetic lives of replicants when scanned by detecting tools.

But the Tyrell Corporation, the metaphorical master, lives on and Roy dies like a martyr in a crucifixion style that illustrates the master's (human's) ultimate control over the slave (cyborg) though he has been killed. The ideology of the master outlives his body and takes the life of the slave, which we see in *Blade Runner* when Roy tells Deckard, "It's quite an experience to live in fear. That's what it is to be a slave" before retiring (Scott, 1993). As such, Roy embodies aspects of what Haraway (1985) has famously defined as a "cyborg." In her celebrated essay, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s," Haraway writes, "A cyborg is a cybernetic organism, a creature of social reality as well as a creature of fiction...The cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation . . . The cyborg is a creature in a post-gender world; it has no truck with bisexuality, pre-Oedipal symbiosis, unalienated labor, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity" (67).

Though it is unclear to me exactly *how* a cyborg is "our ontology" (whose?), it seems safe to expand Haraway's definition from post-gender, cybernetic organism to most urban human beings on earth. We are all mired in technological appendages that bind us to various roles of master and servant across our short lives, prisoners in "off-world colonies" due to the devices that have interfaced with flesh and bone. As we see in the opulent technoscapes, to use Appadurai's term (1990, 98), of *Blade Runner*, the hyperreal circulation of capital around the world has ensured the mass proliferation of technology, and most people around the world regularly carry on their bodies an electromagnetic apparatus (credit/ bank card, cell phone, beeper, etc.). We may even consider the PC with its myriad programs an extension of the self, the mouse simply a third hand, the clicker merely a sixth finger. Following this logic, neither cyborg nor android can always be post-gender - in fact, such a claim would undermine the upright shape and form a cyborg mimes as the product of a human being whose body is heavily encoded by gender. For gender is always also mired in power relations, as is the master and slave relationship; even the fact that Roy and the other replicants have a shelf life indicates that they are emasculated by their limited time in a Third World Los Angeles.

Gender is moreover significant here in the context of Deckard and Roy's android masculinities and the ways in which other characters like Tyrell and Sebastian die off in the film. Indeed, for these characters, death is a form of emasculation; erasure from the film operates as a symbolic castration of agency, visibility, patriarchy. For now, let us concede that an android and/ or cyborg, in my own hybridized formulation of Haraway's, is any futuristic subject whose very subjectivity depends upon technology to sustain its daily practices. The nexus point is an interface between flesh and the body (a hand on a mouse, a bankcard in the wallet, etc.) that is not overdetermined by genetic engineering or the physical fusion of flesh with mechanics. Let us consider the replicant "skin jobs" manufactured in 2019 by the Tyrell Corporation in *Bladerunner*. These beings are a product of "robot evolution" whose genetically engineered bodies are not metallic bone structures overlaid with flesh, rather humans designed with superior strength and agility powers for use as slaves in the exploration and colonization of other planets. As beings that embody a great deal of their makers' traits, Nexus models like Roy and Pris feel physical pain, can bleed, and as we learn in the beginning of the film and witness towards its end, also feel emotion.

The ability, perhaps I should rather say privilege, of androids to pass as human in *Bladerunner* depends on the extent to which they look and act just like humans, and hence, as masters, versus "bad copies" of humans. In "Making Cyborgs, Making Humans: Of Terminators and Blade Runners," Pyle notes that, in films like *Blade Runner*, "we may start out with our assumptions of a clear distinction between human and machine in tact; but through its representation of the hybrid figure of the cyborg, the film 'plays' on a borderline that we come to see as shifting and porous, one that begins to confuse the nature of opposition and the values we ascribe to it" (1993, 229). It follows that the more riddled the boundaries between man and machine are, the more complicated become the politics of gazing and ensuing paradigms of domination and subordination -- this naturally disrupts any clear way of neatly applying the Hegelian master-slave dialectic. Roy's emotive speech after saving Deckard's life and soon before proclaiming his expiry date and dying powerfully illustrates the impossible distinctions between humans and "skin jobs." In the film's finale, Roy and Deckard finally face-off, and the good android/ cyborg prevails because though it is not human, it emulates humanistic character traits. And, as Pyle further notes, *Blade Runner* destabilizes the concept of the human by using the cinematic spectacle of the movie (231).

Filmmaking technology thus facilitates character construction, hence formal aspects of filmmaking are a discursive strategy in the cinematic visualization of the terminators' characteristics and the reflection of narrative. The state-of-the-art filmmaking technologies that create the vivid illusions of Hollywood cinema take an integral role in the visual construction of both Deckard and Roy replicants, and, subsequently, the characteristics of both. At the end of *Blade Runner*, when Roy saves the life of Deckard and delivers his famous "tears in the rain" monologue before shutting off, we see that the Nexus-6 model is perhaps "more human" than the "more human" model that is Deckard. The death of murderous perfection witnessed by its own kind – a slave dying before a slave, that is – revises the earlier scene in which the slave kills its master. One of the slaves that humans once used as forced labour to colonize off-world planets has saved the master's life before succumbing to death. To understand the Hegelian dialectic in the context of android/ human relations is to survey the evolution of social ideology in relation to technology that morals could never before have imagined. Although this may seem to be a futile task since I am casting a pan-historical eye over the treatment of species of others (otherworldly aliens, racialized others, queer subjects, monsters, colonized peoples, cyborgs, etc.), it can be important for critics to do in the prediction of how tropes of othering will evolve.

In other words, master/ slave binaries operate upon the same yet masked ideologies of bias that fortify the dividing lines between white/ black, straight/ queer, human/ cyborg, etc. Yet we see in the signs generated by technology, whether they be on the screen, orbiting the earth, awaiting mass murder or re-defining capital, the absorption and reformulation of otherness. The politics of difference are complex when the other is an appendage of us, and wherein representation in science fiction film suggests that death in the company of an *other* can be a kind of epiphany in comparison to death by gouging out one's eyes. It is precisely, in other words, abjection of the technological other that cements a cathexis between it and the human agent who wishes to reject it only in so far as it is a "bad copy" of the human – a trait that can only be measured through the eyes of the skin jobs. For on-screen simulations or "real" processes involving the "cyborgification" of the human race and the erotic fusion of flesh and metal, the technology fueled by transnational capital promises the potential to become a common earthly experience. From Scott's dreary 2019 that reflects the year in which *Blade Runner* was released, 1982, to the present, the blurring of man and machine makes it ever more questionable exactly who is subject to who or what.

In the 2017 sequel, the urgent quest of Officer K the bladerunner (Ryan Gosling) is to destroy all evidence that replicants can reproduce on their own, and hence blur the line between master and slave (Villeneuve 2017). The sequel complicates the Hegelian dialectic as it situates reproduction as the mediator between master and slave with an impending, and parlays into the filmic narrative the familiar anxieties of miscegenation between black and white Americans from the late 19th century into the late 20th century. When the face of the other shifts from an in-person experience to one facilitated by an ethernet connection, indeed, as Hayles argues in “Virtual Bodies and Flickering Signifiers,” that “pattern and randomness becomes an overarching effect of life” (1999, 25). Ironically, this dehumanization of humans, the uprise of pattern and randomness, is a liberating process that deconstructs the metaphysical values that characterize the human (thus non-human, thus monster, queer, racial other, etc.). Such patterns are intertextual and multilayered, like skin tissues layered upon each other that return us to the most basic functions of organic life and its material needs that both Marx and Althusser outline in their major works. Marxist concerns appear to surface at the end of *Blade Runner 2049* with an organised resistance against to the corporate behemoth.

In his Marxist study of textuality *The Political Unconscious: Narrative as a Socially Symbolic Act*, Frederic Jameson has argued that “texts come before us as the always-already-read; we apprehend them through sedimented layers of previous interpretations, or--if the text is brand-new--through the sedimented reading habits and categories developed by those inherited interpretive traditions” (1981, 9). Jameson’s contention, written the year before Scottt’s film appeared in theaters, describes the relationships between texts as they build upon one another in a way that resembles both subjects of Hegel’s master-slave dialectic as they simultaneously construct one another’s subjectivity and agency. Yet, at the end of the day, Roy demonstrates the superior virtues of both the master and slave against the dystopic slum of Los Angeles – the on-world colony turned into an Asian slum in contrast to the galactic colonies that advertisements loudly glorify. In the words of Vijay Mishra, who compares the film to Mary Shelley’s *Frankenstein* (1818), Roy challenges “the moral primacy of humans and their proprietorial claims to complete emotional plenitude... In the case of Roy Batty the creator's refusal to grant him a longer life turns to violence as the son literally gouges his father's eyes out. Ridley Scott's *Blade Runner*, then, turns the table on humans by giving the morally unimpeachable position to Batty who, in a further twist to the Monster's original dialogue, introduces the elements of slavery, fear, and death into the precursor narrative of Mary Shelley” (Mishra 1994, 210-211).

In and through his mercy for Deckard upon his own deathbed, Roy demonstrates that the subhuman technological miracle of AI is that which we can identify with and find deep within ourselves. Indeed, the audience's gaze comes to empathize with Roy, either through white privilege or a negation of white masculinity, even as it views the non-represented subjects of the off-world colonies as imagined others. That is, we identify with Deckard as the protagonist, the more-human android, and with Roy's merciful act in saving the master that he easily could have murdered. For, in the twenty-first century, most urban humans *are* cyborgs that emulate a sense of gender that technologies like those depicted in *Blade Runner* can help dissolve. Indeed, there seems to be more in common between Deckard and Roy than there is with the gritty Asians that populate futuristic Los Angeles and the unseen settlers who are choosing to call the off-world colonies "home." Though such possibilities will once more morph the master/ slave dialectic rather than fully overwriting it, its fluid play between contexts can perhaps provide humans with avoiding the inconspicuous pitfall of being fully devoted to any one way of thinking, living or being. I would argue that this is especially applicable to specious claims that a single woman character can represent "all women in general" (Maurya et al 2018, 213). Sweeping generalizations like these flatten differences by fetishising gendered body parts, and hardly make for solid scholarship in the realm of film analysis, nor do they do scholarly justice to second, third, and/ or fourth wave feminism.

Indeed, I would conclude that the gendered taxonomies that file beings as human or other are part of the problem rather than the myopic prescription for any kind of social justice – even for the replicants. For as Marleen Barr reminds us, "Although blade runners and humans are two types of humans, they are, nonetheless, all humans who possess memories and feelings...the notion that memory differentiates humans from metahumans is a myth used by the *Blade Runner* society to justify oppression" (Barr 1991, 28). Memories and the subjects they capture are always mediated testaments to the past. This may provide us insight into why Hegelian ideas about idealism and the dialectic are informative for analyzing the apocalyptic visions of the future since the 1980s; they are perhaps more important today, in the era of social media activism, than ever before. As we plunge deeper into sovereign regimes that aggressively cast humans as monsters to justify institutionalised genocides while human labour is further automated, we will need to be more aware and vigilant. For human consciousness and critique of the power relations that structure masters and slaves, and the representational histories that shape them, are vital in re-thinking the stakes of life in the 21st century.

REFERENCES

- Althusser, L. (2001). *Lenin and Philosophy and Other Essays*. Trans. Ben Brewster. New York: Monthly Review Press.
- Appadurai, A. (1990). *Disjuncture and Difference in the Global Economy*. New York: John Wiley & Son, Ltd. p. 98.
- Badham, J. (1986). *Short Circuit*. TriStar Pictures.
- Barr, M. (1991). "Speciesism and Sexism in *Blade Runner*." *Retrofitting Blade Runner: Issues in Ridley Scott's Blade Runner and Philip K. Dick's Do Androids Dream of Electric Sheep?*, 2nd Ed. Judith B. Kerman, Ed. Madison: University of Wisconsin Press, 25-31.
- Baudrillard, J. (1983). "The Ecstasy of Communication." *The Anti-Aesthetic*. Hal Foster, ed. Bay Press. 126-133.
- Benjamin, W. (1968). *Illuminations*. New York: Schocken Books.
- Butler, J. (1991). "Imitation and Gender Insubordination." *Inside/ Out*. Diana Fuss, ed. New York: Routledge. 13-31.
- Coogler, R. (2018). *Black Panther*. Walt Disney Studios.
- Corman, R. (1990). *Frankenstein Unbound*. 20th Century Fox.
- Deleuze, G., and Guattari, F. (1987). *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.
- Fanon, F. (1967). *Black Skin, White Masks*. New York: Grove Press.
- Foucault, M. (1979). *Discipline and Punish: The Birth of the Prison*. New York: Random House.
- Foucault, M. (1990). *The History of Sexuality: An Introduction*. New York: Vintage.
- Gairola, R.K. (2018). "Digital Closets: Post-millennial Representations of Queerness in *Ka-poor & Sons and Aligarh*." *Queering Digital India: Activisms, Identities, Subjectivities*. Edited by Rohit K. Dasgupta and Debanuj Das Gupta. Edinburgh: University of Edinburgh Press 54-71.
- Gordon, S. (1985). *Re-Animator*. Empire International Pictures.
- Haraway, D. (1985). "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s." *Socialist Review* 80: 65-107.
- Hayles, K. (1999). *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature & Informatics*. Chicago: University of Chicago Press.

- Hegel, G.W.F. (1994). *Phenomenology of Spirit*. Trans. Howard P. Kainz. University Park, PA: Penn State UP.
- Hegel, G.W.F. (1977). *Phenomenology of Spirit*. Trans. A.V. Miller. Oxford: Clarendon Press.
- Jameson, F. (1981). *The Political Unconscious: Narrative as a Socially Symbolic Act*. Ithaca, NY: Cornell University Press.
- . (1998). "Postmodernism and Consumer Society." *The Cultural Turn: Selected Writings on the Postmodern: 1983 -- 1998*. London: Verso. 1-20.
- Lambert, M. (1989). *Pet Sematary*. Paramount Pictures.
- Leonard, B. (1992). *The Lawnmower Man*. New Line Cinema.
- Lisberger, S. (1982). *Tron*. Walt Disney Productions.
- Lowe, L. (1996). *Immigrant Acts*. Durham: Duke University Press.
- Mangold, J. (2017). *Logan*. Twentieth Century Fox.
- Manovich, L. (1999). "What is Digital Cinema?" *The Digital Dialectic: New Essays on New Media*. Peter Lunenfeld, ed. Cambridge, MA: The MIT Press. 173-192.
- Maurya, P., Kumar, N., and Mishra, B. (2018). "Unveiling the Secret of Secret Superstar: A Feminist Approach." *Daath Voyage* 3.1, 227-234.
- McGowan, T. (2009). "Hegel and the Impossibility of the Future in Science Fiction Cinema." *Film-Philosophy* 13.1: 16-37.
- Metz, C. (1999). "Some Points in the Semiotics of the Cinema." *Film Theory and Criticism: Introductory Readings*. 5th ed. Leo Braudy and Marshall Cohen, eds. New York: Oxford University Press. 68-75.
- Mishra, V. (1994). *The Gothic Sublime*. Albany, NY: State University of New York Press.
- Prince, S. (1996). "True Lies: Perceptual Realism, Digital Images, and Film Theory." *Film Quarterly: Forty Years -- A Selection*. Brian Henderson, Ann Martin and Lee Amazonas, eds. Berkeley: University of California Press. 392-491.
- Pyle, F. (1993). "Making Cyborgs, Making Humans: Of Terminators and Bladerunners." *Film Theory Goes to the Movies*. Jim Collins, Hilary Radner, and Ava Preacher Collins, eds. New York: Routledge, 1993. 227-241.
- Sarup, M. (1996). *Identity, Culture and the Postmodern World*. Tasneem Raja, ed. Athens: University of Georgia Press.

- Scott, R. (1993). *Blade Runner (The Directors Cut)*. Warner Home Video.
- Shakespeare, W. (1998). *The Tempest*. Dover Publications.
- Shelley, M. (1994). *Frankenstein, or the Modern Prometheus*. Dover Publications.
- Silverman, K. (1999). "On Suture." *Film Theory and Criticism: Introductory Readings*. 5th ed. Leo Braudy and Marshall Cohen, eds. New York: Oxford UP. 137-147.
- Sobchack, V. (1999). "Meta-Morphing 'At the Still point of the Turning World' and Meta-Stasis." *Meta-Morphing: Visual Transformation and the Culture of Quick Change*. Minneapolis: University of Minnesota Press. 130-57.
- Wachowski Brothers. (1999). *The Matrix*. Warner Brothers Pictures.
- Villeneuve, Denis. (2017). *Blade Runner 2049*. Warner Brothers Pictures.

Green Purchase Intentions, Collectivism and Materialism: An Empirical Investigation

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ABSTRACT

With the growing awareness about the harmful effects of global warming, non-bio degradable solid waste, harmful impact of pollutants etc., many companies have accepted their responsibility not to harm the environment and not to waste the natural resources. Companies are switching to eco-friendly products showcasing their environmental responsibility and are using green elements as powerful marketing tools as well. As the increase in marketing push to greening of products impacts consumer awareness and attention to environment issues, this paper attempts to explore into green purchase intentions for consumers and investigates the cultural variable 'collectivism', personality factor 'materialism' along with 'environment concern' and 'attitude' to further deepen the understanding about green consumer behaviour. Using the questionnaire-based survey method, 224 responses were collected from consumers through convenience sampling. The finding of the study suggests positive relationship between collectivism, environment concern, environment attitude and green purchase intention. Moreover, the study also revealed that collectivism acts as a moderating variable on the relationship between environment attitude and green purchase intention. This study suggests that it is important for the marketer to increase environment awareness among consumers so that they can reduce their impact on environment and make a positive difference through their purchasing decisions.

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1. INTRODUCTION

Green and sustainability trend has emerged to reflect more sustainable and green practices due to the pressure on companies from various stakeholders such as consumers, shareholders, employees, partners and governments (Singh, 2013). Green marketing as a new strategy appeals to consumers with products that are “green” or “environmentally friendly” and they satisfy the customer need for quality, reliable price and easy availability of the product without having a harmful impact on the environment (Mishra and Sharma, 2010; Polonsky, 1994 and Rakshita, 2011). Various companies, now being more environmentally responsible, have developed environmental friendly products and services, generally referred as green products, to meet the requirement of environment friendly consumers (Sachdev & Mahna, 2014). Green products are manufactured by using eco-friendly method, nontoxic chemicals which are not injurious for environment, recyclable objects, reusable features, simple packages, and also which are not tested on animals. An eco-friendly chair made of recycled cork, eco-friendly paints made of naturally derived raw materials, cotton or cloth shopping bags, LED bulbs etc., are few examples of eco-friendly products.

Studies exploring into purchase behavior for green products, however, have reported a discrepancy or “gap” between consumer favorable attitudes and actual purchasing practices (Tanner and Kast, 2003; Vermeir and Verbeke, 2006; Chen and Chai, 2010; Wheale and Hinton, 2007). Hughner (2007) affirms that although many consumers showed a positive attitude towards purchase of organic food products (67%), only a small number of consumers (4%) actually purchased these products. Defra’s (2006) study revealed that only 30% of the consumers in UK showcasing their concern towards the environment rarely translated their concern into a green purchase. The discrepancy or gap between consumer favorable attitude and actual purchase behaviour of green products is referred to as ‘green purchasing inconsistency’ or ‘green attitude-behaviour gap’.

This study brings further insights into ‘green attitude-behaviour gap’ by exploring into dynamics of individual behaviour in terms of cultural and personality traits. More specifically, the study is about an investigation into *collectivism* – the cultural trait and *materialism* – the personality trait - to find how group dynamics and individual dynamics determine green purchase intentions. The study seeks to find the intervening effects of *collectivism* and

materialism on relation between *attitude* and *green purchase intention*. *Environmental concern* is another important factor which suggests that consumers who have strong environmental concerns might be interested in consumption of products that reflect their concern (Mostafa, 2009). This study will explore into environmental concern as a factor influencing green purchase intention and the effect of *materialism* on the relation between environmental concern and *green purchase intention*. Figure I shows the conceptualized model for empirical investigation and uses both primary and secondary sources of information to bring interesting insights for the marketers adopting green practices, including green products. Researches investigating into factors converting consumer motivation into pro-environmental action differ in different cultural contexts and suggest that demand and environment attitude for green products is likely to vary across different cultures. Lee and Green (1999) point out that it is difficult to ascertain the validity of the studies in different cultural settings, especially in developing countries like India. It is also observed that majority of the studies in the field of environmental research have been based on developed countries particularly in US. Elham and Nabsiah (2011), Ottman (1992) and Peattie (1992) also reported that demand and environment attitude for green products is likely to vary across different cultures. Lee and Green (1999) point out that it is difficult to ascertain the validity of the studies in different cultural settings, especially in developing countries like India. This study provides direction to marketers in terms of identification of consumer segments who are more likely to have green purchase intentions and the leading factors thereof.

1.1 ENVIRONMENT CONCERN

Alibeli and Johnson (2009), define environmental concern as the degree to which people are conscious of the environmental issues and the motivation to solve the environmental problems. Aman et al., (2012) defined 'environmental concern' as emotional character of consumers such as the irritation toward destruction of nature. People with high level of environmental concerns tend to have a more positive attitude towards the environment than people who think they are incapable to help the environment and as a result they are less likely to contribute in environmental activities (Laskova, 2007). The finding of their study suggests that environmental concern has a significant impact on the green purchasing intention by using attitude as a mediating variable, which implies that environmental concern has positive impact on consumers' attitude and in turn this attitude will lead to the green purchase intention. The hypothesis is:

H1: Environmental concern has significant positive effect on environmental attitude.

Various studies show that environmental concerns have a positive influence on green purchase intention suggesting that consumers who have strong environmental concern might be interested in consumption of products that reflect their concern. Therefore, it suggests positive effect of environment concern on consumer purchase intentions (Mostafa, 2009).

Andres, Salinas and Vallejo (2009) stated that consumers are becoming more concerned about the environmental issues and if the organizations do not take any action relating to environment issues by offering green products they may lose credibility in their customers. Hence, organizations tend to participate in environmental issues and fulfill the customer's expectation. Therefore, this study seeks to further determine the relationship between environment concern and green purchase intention in Indian context. The hypothesis is:

H2: Environmental concern positively influences green purchase intention.

1.2 ENVIRONMENT ATTITUDE

Environmental attitude is defined as a learned predisposition to form a favorable or unfavorable response with respect to the environment (Nik Abdul Rashid, 2010). Environmental attitudes are found in a person's self-concept and can be defined as the level to which individuals distinguishes themselves to be an integral part of environment (Schultz and Zelenzy, 2000). According to Lyon and Maxwell (2004) consumers are ready to change their purchase behavior and become more aware about environment issues such as pollution and global warming and form a positive attitude towards green products. There are various researches which show the positive and significant association between the environmental attitude and green purchase behavior. Laroche et al., (2001) showed that environment attitude is an important determinant of an individual motivation to pay higher price for green products and contribute toward sustainable consumption.

Researchers also argue that even though environment awareness and concern about environment have increased among people, but still there exists a gap between people's attitudes and their actual purchasing behaviour (Jansson et al., 2011; Kim & Chung, 2011; Barker & Ozaki, 2008; Mostafa, 2007; Garling et al., 2003). In spite of the motivation of the consumers to behave in an eco-friendly manner their actual participation in green purchasing is very less. Therefore, this study aims to bring more clarity about the relationships between environment attitude and green purchase intention in Indian context and the hypothesis is:

H3: Environment attitude positively influences green purchase intention.

1.3 COLLECTIVISM

Hofstede's individualism vs. collectivism orientations has turned out to be key variables or descriptive features in a wide range of environmental research (Kim & Choi, 2005; Sarigollu, 2009; Leonidou & Lulea, 2010). Kim and Choi (2005) identified three factors, viz., collectivism, environment concern and perceived consumer effectiveness that generally affect consumer environmental behaviour. Samarasinghe (2012) also discovered collectivism as a good predictor for formation of environment attitudes. According to McCarty & Shrum (1994) collectivism is about people who think collectively and likely to protect the environment so that the whole society can enjoy prosperity. People in collectivistic society are more likely to engage in green purchase behavior as they tend to be more cooperative, be more willing to help others, and give emphasis to group goals over personal ones than individualistic people. People under collectivistic culture consider adhering to social norm as an important part of decision making and thus, give more emphasis to emotional aspects rather than rational cost benefit decisions. *Collectivism* as a cultural value tends to have positive influence on green purchase intention (Chan, 2001; Ling-yee, 1997; McCarty and Shrum, 1994; Sinha, 1990) and people in individualistic societies give less emphasis to recycling behavior (Li, 1997). People in an individualistic society promote their own goals and desires, give importance to independence and self-reliance as well as ignore external interference by society or institutions (Gagnier, 2010). Thus, it appears that people from individualistic cultures tend to be independent and self-oriented whereas those from collectivistic cultures are more interdependent and group-oriented.

Handique, (2014), on the other hand, suggests that collectivistic people tend to retain traditional ideas and be rigid in modifying their behaviors and habits, thus reflecting the negative effect of collectivism on green purchase intention. Therefore, there is a need to further explore into the effect of the cultural value of collectivism on green purchase intention, particularly in Indian context that has a collectivist culture. Sinha et al. (2001) and Sinha (1990) point out that Indian people prefer to follow the particular group and develop their identity from the group membership as well as looking for guidance for suitable behavior from the group itself. The hypothesis, therefore, is:

H4: *Collectivism* positively influences green purchase intention.

McCarty and Shrum (1994, 2001) in their study found a significant impact of collectivism on consumer attitudes about green purchase behavior implying that people in a collectivistic

society are more likely to engage in green purchase behavior because they tend to be more cooperative, be more willing to help others, and give emphasis to group goals over personal ones than individualistic people. Collectivistic persons who give importance to group goals and cooperation might be extremely motivated to make pro-environmental choices by having stronger beliefs that their behaviour would make a difference in mitigating environmental problems (Kim and Choi, 2005). According to Schultz et al. (2007) people generally use their existing attitude while interpreting environment problems which might be influenced by their culture. The study will thus further explore into the linkage between environmental attitude and green purchase intention within the context of collectivist cultural values and the hypothesis is:

H5: Higher the level of *collectivism* as a cultural trait, stronger is the linkage between *environment attitude* and *green purchase intention*.

1.4 MATERIALISM

Belk (1985) define materialism as “the importance associated with material goods by the consumer.” It includes various qualities such as envy, possessiveness, goal and stinginess. Thus, material goods that are owned by the people represent the important part of their life. Materialism promotes ineffective consumption i.e., more than essential or may be consumption even when it is not required (Good, 2007). Consumption, therefore, is considered as the major reason of environment degradation that can affect both the society and environment. Environment is being used and destroyed for consumption (Brown & Kasser, 2005). Consumption by materialistic individuals can be harmful for the environment, signifying a negative relationship between materialism and green purchase intention. Materialist consumers believe that they need to be wealthy to be happy and consequently they are more demanding and feel more pressurised as compared to less materialistic consumers (Muncy and Eastman, 1998). Thus, they behave more unethically with the intention of having the thing they desire. Materialism is dominantly examined and viewed as a variable of dark side of consumer behavior (Mick, 1996).

Strizhakova and Coulter (2013) also found that individuals with highly materialistic values are less aware about the environment and concentrate on activities that are not intended to protect the environment. Bredemeier and Toby (1960) showed that materialism results in many social problems. Various researchers argue that it affects the level of joy and self-esteem of the individual and as a result materialistic individuals want to associate themselves with the brand while ignoring their negative effect on environment.

On the contrary, various researches have shown the positive relationship between materialism and green purchase intention (Hye-Jung Park, Leslie Davis Burns and Nancy J. Rabolt, 1996). As environment friendly consumers are ready to give extra money for green products thus materialistic values for them would include possession of products that are eco-friendly (Strizhakova & Coulter, 2013). Similar results are also found in the study of Alston & P. Roberts (1999). '*Green materialism*' is therefore a recently coined term which reveals the optimistic side of envious desires. The effect of material wants on environment friendly behavior has not received much attention of researchers in the past. The investigation into materialism as a personality trait will further allows this study to explore green purchase intentions. The hypothesis here is:

H6: Materialism negatively effects green purchase intention.

Kilbourne and Pickett (2007) investigated the relationship between materialism, environmental beliefs, environmental concern and environmental behaviors. It shows that materialism has a negative effect on environmental beliefs and consequently these beliefs significantly affect environmental concern and environmentally responsible behaviors. Environment concern is found to be negatively affected by materialism (Manchanda, 2014). Tilikidou and Delistavrou, (2004) showed that materialism and environment concern is negatively related to environmental purchasing behavior i.e. lower the level of materialistic values and environment concern, higher will be the environment purchasing behavior. Consumers, who achieve satisfaction and happiness by material possessions have greater tendency to be self-centered and are less unlikely to acquire satisfaction by getting involved in environmental activities. It can be interpreted that people who hold higher level of environment concern towards eco-friendly behaviour mainly hold lower level of materialistic values and are more likely to enhance green purchase behaviour. Materialism, hence, tends to moderate the relationship between environment concern and green purchase intention and the related hypothesis is:

H7: Lower the level of materialistic values, stronger is the relationship between environment concern and green purchase intention.

H8: Lower the level of materialistic values, stronger is the relationship between environment attitude and green purchase intention.

By reviewing the related literature, the conceptual model is developed and it is presented in the Figure I.

2. METHODOLOGY

Multi-item scales were used to measure *collectivism*, *materialism*, *environment concern*, *environment attitude*, and *green purchase intention* and scale items were adapted from past researches to suit the Indian context (Table I). *Materialism* was measured in terms of three dimensions, viz. *centrality*, *success* and *happiness* (Richins and Dawson, 1992). The *centrality* scale describes how many possessions and acquisitions are likely to be the centre of one's life. The *success* scale measures the degree to which people have a tendency to judge themselves and others by the quality and number of possessions accumulated. *Happiness* scale measures the degree to which possessions and acquisitions become necessary to attain satisfaction and happiness in one's life (Richins and Dawson, 1992). A structured questionnaire was developed and administered through drop-off method in Delhi and Gurgaon region and also through online Google.doc survey. Using convenience sampling the responses were obtained on 7-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. After initial round of pilot testing, 240 responses were collected during the month of September 2015 to May 2016, and 226 responses were found usable for the purpose of analysis. Majority of the sample respondents were young (less than 35 years of age) and highly educated (44.2%) working (71%) females (58.9%). They are married (52.7%) and live in a nuclear family (52%). They are either pursuing their career in service (26.8%) or are professionals (28.1%).

3. ANALYSIS

Descriptive Analysis: Reliability analysis using Cronbach alpha suggests internal consistency for all measurement scales as Cronbach alpha value is more than 0.60 (Table II).

Mean value scores suggest that sample carries higher levels of collectivists traits and is highly concerned about environment and carries strong environmental attitude. In regard to materialistic traits, the sample holds weak opinion about linkage of centrality, success and happiness to material possessions in life.

Regression Analysis: The results of liner regression support hypothesis H1, which suggests that *environmental concern* has significant positive effect on environmental attitude (Table III). In regard to *green purchase intentions*, the results of multiple regression analysis support hypotheses H2, H3 and H4 and thus *environmental attitude*, *environmental concern* and *collectivism* positively affect *green purchase intentions* and explains 46% of variation for

green purchase intentions(Table III).The study does not support the hypothesized negative effect of *materialism* on *green purchase intentions*(H6).

Hierarchical regression analysis was used to test the moderating effect of *collectivism* on *green purchase intention* and therefore interaction term was introduced in the regression model. In order to eliminate multicollinearity with the interaction term, according to Aiken & West (1991), the variables were first centered and an interaction term between the independent variable and moderator was created.

The introduction of interaction effect of *collectivism* on relation between *environment attitude* with *green purchase intention* brings significant change in the regression model (R square change of 2.4%), where model 2 is significant with F value 41.71. Further, there is moderating effect of *collectivism* on *environment attitude* and *green purchase intentions* as the interaction term is significant at $p < .05$ level.

Simple slopes test using Process by Andrew F. Hayes (2012) provides z value of *collectivism* significant at $p < .05$ level in all the three cases, i.e., one standard deviation below the mean, at the mean, and one standard deviation above the mean (Table V). Conditional effect of *environment attitude* on *green purchase intention* is shown through simple slope diagram plotted through excel sheet developed by James Gaskin (Fig.II). *Environment attitude*, although, is positively related to *green purchase intention* for both low and high levels of *collectivism*, the relationship is more pronounced at high level of *collectivism* and it supports the hypothesis H5.

The results of hierarchical regression analysis (Table IV) does not support the hypothesized effect of *materialism* on relation between *environmental concern* and *green purchase intention* (H7) and *environmental attitude* and *green purchase intention* (H8). The interaction term, although, is found insignificant at $p < .05$ level in both the cases, the effect of *materialism* on *green purchase intention* is significantly positive while testing its moderating effect relation between *environmental concern* and *green purchase intention*. The results need further investigation for the reason that the part of the literature also suggests positive effect of *materialism* on GPI.

4. DISCUSSION & IMPLICATIONS

Awareness about degrading environment results into a new tendency among people to adopt the products that are less detrimental to the environment and it is very important to have a clear

understanding about the factors that influence their purchase behavior and motivate them to buy green products. The study supports the role of cultural values in explaining green purchase behavior of consumer. Collectivist values as against individualistic values tend to make people friendlier to the environment (Chan, 2001; Triandis, 1993; Ling-yee, 1997). The study also found positive influence of environment attitude on green purchase intention which supported the Laroche et al., (2001) study. Thus, people with positive environment attitude, in particular those with strong collectivist values can contribute more towards sustainable consumption by buying green products. Consistent with Laskova (2007), since the study also suggest significant positive effect of environment concern on green purchase intentions, the marketer should increase awareness regarding availability of eco-friendly products among the people and educate them about the features and benefits of eco-friendly products.

This study is limited in its scope as factors like perceived consumer effectiveness, environmental knowledge also need to be investigated to clearly understand consumer green purchase intentions. The insight into role of *collectivism* in shaping green purchase intention is indeed encouraging and further studies in cross-cultural context will help in shaping green marketing strategies. Though, the results are not significant either for the direct or indirect effect model for materialism, the positive beta values suggest the need to further explore the linkage with green purchase intention, particularly in view of rise in green materialism.

REFERENCES

- Ahmad, W. A. (2013). Antecedents of Purchase Intention for Foreign Apparel Products among Pakistani University Students: Implications for Market Entry Strategy. *Middle-East Journal of Scientific Research*, 1255-1263.
- Aiken, L. S. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, London: Sage.
- Ajzen, I. (1991). *The theory of planned behavior. Organizational Behaviour and Human Decision Processes* (Vol. 50).
- Ali, A. &. (2012). Environment Friendly Products: Factors that Influence the Green Purchase Intentions of Pakistani Consumers. *Pak. j. eng. technol. sci*, 84-117.
- Aman L., H. A. (2012). The Influence of Environmental Knowledge and Concern on Green Purchase Intention the Role of Attitude as a Mediating Variable. *British Journal of Arts and Social Sciences*, 145-167.
- Baron, R. M. (1986). The Moderator - Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Psychology Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Barua, P. (2011). Young Consumers' Purchase Intentions of Buying Green Products: A study based on the Theory of Planned Behaviour.
- Belk, R. W. (1985). Materialism: Trait aspects of living in the material world. *Journal of Consumer Research*, 12, 265-280.
- Brown, K. W. (2004). *Having and being: Investigating the pathways from materialism and mindfulness to well-being*. University of Rochester: Unpublished Data.
- Chen, L. (2013). A Study of Green Purchase Intention Comparing with Collectivistic (Chinese) and Individualistic (American) Consumers in Shanghai, China. *Information Management and Business Review*, 5(7), 342-346.
- D'Souza, C. T. (2005). Public environmental consumerism: Recycling behaviour and its impact on intentions to purchase green products. *Proceedings of the 30th Annual Macromarketing Conference*. 31, p. 28 May. Florida: St. Petersburg.
- Do Valle, e. a. (2005). Combining Behavioral Theories to Predict Recycling Involvement Environment and Behaviour. 37(3), 364-396.
- Dunlap, R. a. (2002). *Environmental concern: Conceptual and measurement issues*. London: Greenwood: In handbook of environmental sociology ed.
- Ergen, A. B. (2015). Effect of materialism and environmental knowledge on environmental consciousness among high school students: A study conducted in Istanbul province. *International Journal of Human Sciences*, 511-526.

- Good, J. (2007). Shop 'til we drop? Television, materialism and attitudes about the natural environment. *Mass Communication & Society*, 10(3), 365-383.
- Hayes, F. A. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 70, 408-420.
- Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-Related Value*. Beverly Hills: CA: Sage.
- Hughner, R. S. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, 6(23), 94-110.
- Jain, S. K. (2004, July-December). Green marketing: An Indian perspective. *Decision*, 31(2), 18-31.
- Kasser, T. a. (2002). Materialistic values and well-being in business students. *European Journal of Social Psychology*, 32, 137-146.
- Kaufmann H.R., P. M. (2012, February). Factors Affecting Consumers' Green Purchasing Behaviour: An Integrated Conceptual Framework. *Amfiteatru Economic*, XIV (31).
- Keller, K. J. (n.d.). *Marketing Management* (13th Edition ed.) Pearson Prentice Hall.
- Kilbourne, W. &. (2008). How materialism affects environmental beliefs, concern and environmental responsible behaviour. *Journal of Business Research*, 61, 885-893.
- Kim, Y. (2005). Antecedents of Green Purchase Behavior: An Examination of Collectivism, Environmental Concern, and PCE. *Advances in Consumer Research*, 32, 592-599.
- Kim, Y. (2011). Understanding Green Purchase: The Influence of Collectivism, Personal Values and Environmental Attitudes and the Moderating Effect of Perceived Consumer Effectiveness. 17(1).
- Laroche, M. B.-F. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503-520.
- Lee, K. (2008). Opportunities for green marketing: young consumers. *Marketing Intelligence & Planning*, 26(6), 573-586.
- Ling-yee, L. (1997). Effect of collectivist orientation and ecological attitude on actual environmental commitment: The moderating role of consumer demographics and product involvement. *Journal of International Consumer Marketing*, 9, 31-53.
- Mainieri, T. a. (1997). Green buying: the influence of environmental concern on consumer behaviour. *Journal of Social Psychology*, 137(2), 189-204.
- Manchanda, R. (2014a). *Materialism and Green Marketing: The Implicit Disconnect Edited Book: International Seminar on Socio Technical Frontiers of Global Management* (Vol. 1). M Publication.

- McCarty, J. A. (2001). The influence of individualism, collectivism, and locus of control on environmental beliefs and behaviour. *Journal of Public Policy and Marketing*, 20(1), 93-104.
- Mostafa, M. (2009). Shades of green: A psychographic segmentation of the green consumer in Kuwait using self-organizing maps. *Expert Systems with Applications*, 36(8), 11030-11038.
- Nik Abdul Rashid, N. (2009). Awareness of Eco-label In Malaysia's Green Marketing Initiative. *International Journal of Business and Management*, 4(8), 132-141.
- Ottman, J. (1992, July/August). Industry's Response to Green Consumerism. *Journal of Business Strategy*, 13, 3-7.
- Peattie, K. (1992). *Green Marketing*. London: Longman.
- Richins, M. &. (1992). a consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, 19, 303-316.
- Samarasinghe, R. (2012). The Influence of Cultural Values and Environmental Attitudes on Green Consumer Behaviour. *International Journal of Behavioural Science*, 7(1), 83-98.
- Schultz, W. P. (2007). "Self, Identity, and the Natural Environment: Exploring Implicit Connections with Nature. *Journal of Applied Social Psychology*, 37(6), 1219-1247.
- Sharma, P. (2011). Country of Origin Effects in Developed and Emerging Markets: Exploring the Contrasting Roles of Materialism and Value Consciousness. *Journal of International Business Studies*, 42, 285-306.
- Singh, K. P. (2014). Managing Green Purchase Intention: A Theoretical Framework. *International Journal of Engineering Research & Technology*, 409-416.
- Sinha, J. S. (2001). Collectivism co existing with individualism: An Indian Scenario. *Asian Journal of Social Psychology*, 4(2), 133-145.
- Strizhakova, Y. a. (2013). The "Green" Side of Materialism in Emerging BRIC and Developed Markets: The Moderating Role of Global Cultural Identity. *International Journal of Research in Marketing*, 30, 69-82.
- Tanner, C. &. (2003). Promoting sustainable consumption: Determinants of green purchases by Swiss Consumers. *Psychology and Marketing*, 20(10), 883-902.
- Tilikidou, I. (2007). The effects of knowledge and attitudes upon Greeks pro-environmental purchasing behavior. *Corporate Social Responsibility and Environmental Management*, 14(3), 121-134.
- Triandis, H. (1993). "Collectivism and individualism as cultural syndromes", Cross-cultural Research. 27(3), 155-180.

Vermeir, I. &. (2006). Sustainable food consumption: exploring the consumer attitude-behavioral intention gap. *Journal of Agricultural and Environmental Ethics*, 19(2), 1-14.

Webster, F. J. (1975). "Determining the characteristics of the socially conscious consumer". *Journal of Consumer Research*, 12(2), 188-196.

Wheale, P. &. (2007). Ethical consumers in search of markets. *Business Strategy and the Environment*, 16(4), 302-315.

<http://www.jeremydawson.co.uk/slopes.html>.

Tables:**Table I: Measurement Scales**

| No | Variable | Items | Source |
|----|---------------------|---|---|
| 1 | Collectivism | <ul style="list-style-type: none"> • I respect the majority's wish. • Whatever be the circumstances, I always support my group. • I respect decisions made by my group. • I maintain harmony in my group. | Kim and Choi (2005) |
| 2 | Materialism | <ul style="list-style-type: none"> • I admire people who own expensive homes, cars, and clothes. • Some of the most important achievements in life include acquiring material possessions. • The things I own say a lot about how well I'm doing in life. • I like to own things that impress people. • I enjoy spending money on things that aren't practical. • Buying things gives me a lot of pleasure. • I like a lot of luxury in my life. • My life would be better if I owned certain things I don't have. • I'd be happier if I could afford to buy more things. • It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. | Richins and Dawson (1992) |
| 4 | Environment Concern | <ul style="list-style-type: none"> • I am very concerned about the environment. • Humans are severely abusing the environment. • I would be willing to reduce my consumption to help protect the environment. • When human interfere with nature it often produces disastrous consequences. • The balance of nature is very delicate and easily upset. • Human must live in harmony with nature in order to survive. • I am emotionally involved in environmentally protection issues in country. • I often think about how the environmental quality of country can be improved. | Kilbourne et al. (2008) and (Dunlap and Van L, iere 1978) |

| No | Variable | Items | Source |
|----|--------------------------|--|---------------------------------|
| 5 | Environment Attitude | <ul style="list-style-type: none"> • I believe that use of green products by me will help in reducing pollution and also help in improving the environment. • I believe that use of green products by me will help in reducing wasteful use of natural resources. • I believe that use of green products by me will help in conserving natural resources. • I feel good about myself when I use green products. | Do Valle et al. (2005) |
| 6 | Green Purchase Intention | <ul style="list-style-type: none"> • I will consider buying products because they are less polluting. • I will consider switching to other brands for ecological reasons. • Over the next one month, I plan to switch to a green version of a product. • I like to purchase green product • I will pay more money for a green product • I will take green product as a first consideration • I will repeat purchasing green product • I will recommend other people to purchase green product. | Mostafa's (2007) and Lee (2008) |

Table II: Descriptive Statistics and Reliability Scores

| Particulars | Grand mean | S.D. | No. of items | Cronbach's alpha |
|--------------------------|------------|-------|--------------|------------------|
| Collectivism | 5.5 | 0.837 | 4 | 0.602 |
| Environment Concern | 6.2 | 0.633 | 8 | 0.830 |
| Environment Attitude | 6.01 | 0.657 | 4 | 0.813 |
| Materialism | 4.57 | 1.31 | 10 | 0.913 |
| Green Purchase Intention | 5.76 | 0.782 | 8 | 0.898 |

Table III: Regression Results

Note: *level of significance at $p < 0.05$ level
 R Square = .0.461; Adjusted R Square = 0 .448; F = 37.049; Significance p value = 0.00
 EA=Environment attitude, EC=Environment concern and GPI=Green Purchase Intention

Table IV: Results of Hierarchical Regression Analysis

| Hypotheses | Model | R Square | Ad-justed R Square | R Square Change | Sig. F Change | F | p-value * |
|-------------------------|---------------------------------|----------|--------------------|-----------------|---------------|--------|-----------|
| EA, Collec-tivism & GPI | Without interaction term | 0.339 | 0.333 | 0.339 | 56.679 | 56.679 | 0.000 * |
| | With Interaction term- EA*Coll. | 0.363 | 0.354 | 0.024 | 8.122 | 41.711 | 0.005 * |
| EC, Materi-alism & GPI | Without interaction term | 0.312 | 0.306 | 0.312 | 50.196 | 50.196 | 0.000 |
| | With Interaction term- EC*Mate. | 0.317 | 0.307 | 0.005 | 1.390 | 33.986 | 0.240 |
| EA, Materi-alism & GPI | Without interaction term | 0.321 | 0.315 | 0.321 | 52.244 | 52.244 | 0.000 |
| | With Interaction term- EA*Mate. | 0.322 | 0.313 | 0.001 | 0.238 | 34.788 | 0.626 |

Note: *level of significance at $p < 0.05$ level

Table V: Conditional Effect of Environment Attitude on Green Purchase Intention

| Z Value of Collectivism | Effect | Std. Error | t-value | p-value* |
|-------------------------|--------|------------|---------|----------|
| One SD below mean | 0.569 | 0.0566 | 10.06 | 0.000 |
| At the mean | 0.469 | 0.0586 | 8.00 | 0.000 |
| One SD above mean | 0.367 | 0.0786 | 4.67 | 0.000 |

Note: $*p \leq 0.05$

Figure:

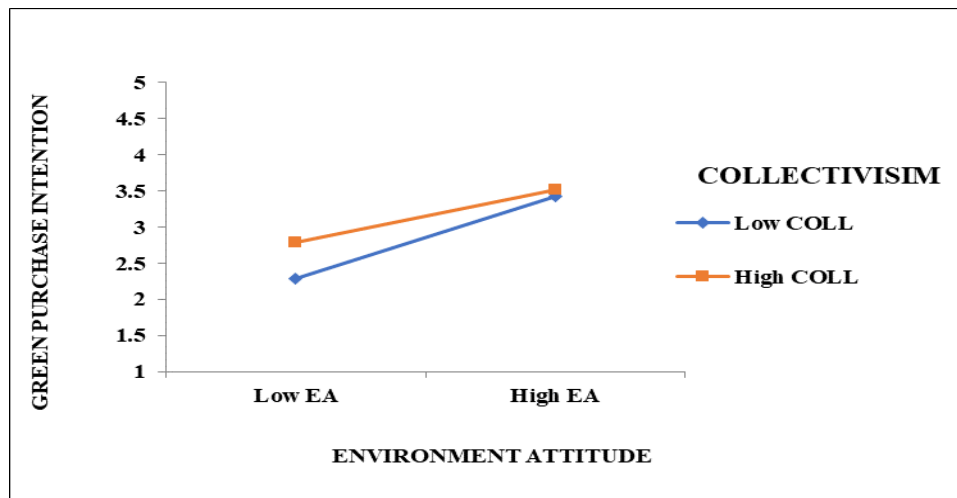


Figure II: Moderating Effect of Collectivism

Do MSMEs Engage in Cartels? A Brief Anti-trust Perspective from India*

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ABSTRACT

One of the primary objectives of a competition agency is to prohibit cartels since they injure customers by raising prices and restricting supply, thus making goods and services completely unavailable to some purchasers and unnecessarily expensive for others. Section 3(3) of the Indian Competition Act prohibits agreements in respect of production, supply, distribution, storage, acquisition or control of goods or provision of services, which causes or is likely to cause an Appreciable Adverse Effect on Competition (AAEC) within India. However, co-operation agreements among the SME are often considered a means of ensuring survival and offsetting structural disadvantages. Forms of co-operation whose sole purpose and intent is the restriction of competition are not exempt from a general ban on cartels. Given the above, the paper considers the recent anti-trust cases in India which involved SMEs and looks at the forms of co-operation between them and the specific need for advocacy on competition issues for the SME sector.

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Keywords: Competition Act, MSME, Cartel, Bid-rigging, Trade association, Horizontal agreements, Vertical agreements, Anti-trust.

1. INTRODUCTION

Competition Act, 2002 lists down four overarching objectives that it strives to achieve i.e. "*to prevent practices having adverse effect on competition, to promote and sustain competition in markets, to protect the interests of consumers and to ensure freedom of trade carried on by other participants in markets*". Chapter II of the Act lists down prohibitions/regulations put in place by the Act to achieve the above objectives. Under Chapter II, section 3 deals with prohibition of anti-competitive agreements, section 4 deals with prohibition of abuse of dominant position and section 5 and 6 concern regulation of combination. An important feature of India's competition law is that it is size and type neutral i.e. there are no explicit provisions for safeguarding enterprises based on their size and type of business. All enterprises, irrespective of their size, are equal in the eyes of the law unlike some other jurisdictions where SMEs or some type of businesses receive explicit (though not absolute) protection under the respective competition laws. Countries like Australia, Germany, Japan, and South Korea have special provisions relating to collective bargaining contracts of SMEs or provide immunity to SME cooperatives. Under Competition and Consumer Act 2010 (CCA) of Australia, SMEs can apply for immunity from legal action on their collective bargaining arrangement by notifying the Australia Competition and Consumer Commission (ACCC). Unlike in Australia, SME cartels need not seek prior approval from the GCA as efficiency of such cartels is presumed, which is why they are categorized as 'unopposed' cartels (OECD, 2004). The arrangement in Japan is similar to the one in Germany where SME cartels are presumed to be legal and are called unopposed cartels. (Takahashi, 2003).

The MSMEs contribute 35-40% of India's GDP. They are a major contributor to balanced economic growth and development of the economy through their contribution to growth, employment generation and poverty reduction. Moreover, MSMEs reduce rural urban migration by providing employment opportunities in rural areas and promoting indigenous technologies. The small size of MSMEs can be both an advantage and a disadvantage. While the small size helps the MSMEs in terms of faster decision making and quicker adaptability to market conditions, it also makes it difficult for them to access capital markets or compete with larger rivals. They are hence more susceptible to cyclical and structural downturns and fluctuations

in business activity. MSMEs are vulnerable to anti-competitive acts of bigger corporations, including abuse of monopoly power which have the potential to inhibit their growth and thereby affect their functioning. Therefore, at times cooperation agreements among MSMEs tend to be necessitated for the survival of the firms. Agreements amongst SMEs help to counteract some or all the economies of scale that a large firm may enjoy. There are two schools of thought regarding these cooperation agreements among SMEs. One view holds that by increasing the SME's efficiency, these agreements are of great importance to economic and competition policy. It has been argued that they can contribute in improving competitive structures and in that case, are even considered desirable from a competition policy perspective. Many a times, this very co-operation agreement enables SME to compete with large firms. Thus, the SMEs help to increase competition in the market and the agreements amongst SMEs may be justified on that basis. The opposite view is that cooperation stifles competition. Efficiencies are more likely to be promoted by competition. It is argued that the incentive to seek efficiency is greater in markets where there is competition (Hay & Liu, 1997). Co-operation among individual firms, including SME, restricts the scope for initiative. Thus, the limit to co-operation among SMEs must be set where substantial anticompetitive effects are felt in the relevant market.

Trade associations formed by SMEs became an essential body to ensure cooperation and survival. Some Indian cases discussed below illustrate how certain business practices which were considered normal and attracted no legal scrutiny earlier were deemed illegal under Competition Act 2002. On the other hand, the Competition Act 2002 also provides recourse to the SMEs if they are victims of any anti-competitive practice by other market players especially larger enterprises. Given the importance of MSMEs in the economy, it is critical that their interests be protected and they are made aware of the legal and institutional mechanisms that are available to protect their interests. This paper looks at cases under section 3(3) where MSMEs have been involved and assesses the need for advocacy.

Anti-competitive effect of cooperation amongst firms in the market depends upon the quality, nature and intensity of cooperation. It is difficult to determine whether and to what extent competition has increased or decreased because of a SME co-operation agreement. An initial evaluation may be based on the combined market share of the parties. The paper looks at a few Indian cases under Section 3(3) of the Act and discusses the impact that the trade associations of SMEs have had on the market.

2. DATA and METHODOLOGY

The methodology for the study consisted of a review of existing literature, the study of the relevant rules, regulations, legislation, cases and policy documents of the Competition Commission of India (“CCI”) and Government of India covering MSMEs, as well as a review of the international experience of special provisions for MSMEs in International jurisdictions. Interviews with SME associations were conducted to understand the ground realities of the sector.

3. MSME- DEFINITION AND ANTI-TRUST PERSPECTIVE

Though according to MSME Act 2006 MSMEs are identifiable as per laid down statutory definitions, SME are not easily identifiable by clear-cut criteria in orders of the CCI. MSMEs can be classified into Registered Sector, Unregistered Sectors and SSI. SMEs are active in nearly all markets and nearly all sectors of the economy. The forms of SME are therefore equally diverse, ranging from single proprietorship to a firm with several hundred employees or an internationally known successful and leading specialty supplier filling a market niche. Many SMEs in India are in the retail trade sector, basic machinery, leather and textile industry where they coexist with large enterprises.

As the term suggests, SMEs are distinguished from other business units mainly by size criteria. In India, the MSMEs are defined based on investment in plant and machinery separately for manufacturing and services sector, generally without regard to the nature or type of industry where they operate, Chapter III of the MSME Act, 2006. The MSME Act defines an MSME as follows:

In the case of the enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the First Schedule to the Industries (Development and Regulation) Act, 1951, an enterprise is defined as-

- i. *A micro enterprise, where the investment in plant and machinery does not exceed twenty-five lakh rupees;*
- ii. *A small enterprise, where the investment in plant and machinery is more than twenty-five lakh rupees but does not exceed five crore rupees; or*
- iii. *A medium enterprise, where the investment in plant and machinery is more than five crore rupees but does not exceed ten crore rupees;*

In case of the above enterprises, investment in plant and machinery is the original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No. S.O. 1722(E) dated October 5, 2006

In case of enterprises engaged in providing or rendering of services, is defined as-

- i. *A micro enterprise, where the investment in equipment does not exceed ten lakh rupees;*
- ii. *A small enterprise, where the investment in equipment is more than ten lakh rupees but does not exceed two crore rupees; or*
- iii. *A medium enterprise, where the investment in equipment is more than two crore rupees but does not exceed five crore rupees.*

The Parliamentary Standing Committee on Industry has suggested that the definition of MSME should be amended to make it more flexible. The Report of the Working Group also points out that every enterprise in its infant years is an SME which should cover all start-ups. Moreover, the criterion of investment in plant and machinery stipulates self-declaration which in turn entails verification, if deemed necessary, and leads to transaction costs. In Feb 2018, the Union Cabinet chaired by the Prime Minister approved change in the basis of classifying Micro, Small and Medium enterprises **from ‘investment in plant & machinery/equipment’ to ‘annual turnover’**. Section 7 of the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 will accordingly be amended to define units producing goods and rendering services in terms of annual turnover as follows:

- *A micro enterprise will be defined as a unit where the annual turnover does not exceed five crore rupees;*
- *A small enterprise will be defined as a unit where the annual turnover is more than five crore rupees but does not exceed Rs 75 crore;*
- *A medium enterprise will be defined as a unit where the annual turnover is more than seventy five crore rupees but does not exceed Rs 250 crore.*

Additionally, the Central Government may, by notification, vary turnover limits, which shall not exceed thrice the limits specified in Section 7 of the MSMED Act. The proposed change is pending for approval in Lok Sabha.

Countries across the world define MSMEs based on various parameters *viz.* number of employees, assets, turnover and capital and investment; and these variables can be differentiated by industry in some cases. It is pertinent to note that India has traditionally been using the investment in plant and machinery as the metric to define the MSME sector as investment in assets can be verified and measured. However, it must be appreciated that each sector has its own unique capital requirement and standard revenue and growth rates. Hence, in today's complex business environment, turnover and number of employees are becoming more relevant matrices for consideration of coverage. Almost the entire European Union and the Americas, including the US, base their categorisation of firms for this sector only based on the number of people employed and their turnover. In fact, the US Trade Commission defines SMEs only based on number of people employed. In Germany, the accepted definition of SMEs is businesses with an annual turnover of less than €50 million and with fewer than 500 employees. In a European context, an SME has been defined by the European Commission as being a company with fewer than 250 employees and an annual turnover of less than €50 million (or total assets of less than €43 million).

Further, the emerging economies have taken a step further to constantly revise and raise the turnover and headcount caps to match the global standards. Brazil categorises its MSME sector as individual entrepreneur, micro and small businesses. Similarly, South Africa tags its MSME sector into micro, very small, small and medium businesses thereby encompassing all the small businesses in its purview. South Africa and Argentina have extensively defined their MSME sector based on industries (agriculture, trade, services, industrial, etc.) and the corresponding revenues and headcount to maintain unique characteristics of each industry and best channelise the resources to support their development requirements.

As discussed above, the Competition Act, 2002 is size neutral. SME are not classified according to absolute size criteria but in relation to the remaining firms in the relevant market for the purposes of competition law enforcement. This implies that despite a substantial turnover, a firm may be classified as SME, because it is active in a market in which several other competitors record significantly higher turnovers. In a different market a firm with the same turnover might be considered a large firm in comparison with competitors in that market. Therefore, market structure is a decisive factor.

4. PROHIBITION OF ANTI_COMPETITIVE AGREEMENTS

Section 3 of the Act prohibits all anticompetitive agreements, both horizontal and vertical. Section 3(1) states “*No enterprise or association of enterprises or person or association of persons shall enter into any agreement in respect of production, supply, distribution, storage, acquisition or control of goods or provision of services, which causes or is likely to cause an appreciable adverse effect on competition within India.*” Section 3(3) deals specifically with horizontal agreements. It states: “*any agreement entered into between enterprises or associations of enterprises or persons or associations of persons or between any person and enterprise or practice carried on, or decision taken by, any association of enterprises or association of persons, including cartels, engaged in identical or similar trade of goods or provision of services, which –*

- (a) directly or indirectly determines purchase of sale prices;*
- (b) limits or controls production, supply, markets, technical development, investment or provision of services;*
- (c) shares the market or source of production or provision of services by way of allocation of geographical area of market, or type of goods or services, or number of customers in the market or any other similar way;*
- (d) directly or indirectly results in bid rigging or collusive bidding, shall be presumed to have an appreciable adverse effect on competition.”*

After it is established that there is an agreement of any kind under Section 3(3), the agreement is presumed to have an appreciable adverse effect on competition (AAEC) and the burden of proof is on the alleged contraveners to demonstrate that such agreement did not lead to any AAEC.

Section 2(c) of the Act defines ‘cartel’ to include an association of producers, sellers, distributors, traders or service providers who, by agreement amongst themselves, limit, control or attempt to control the production, distribution, sale or price of, or, trade in goods or provision of services. Section 19(1) provides for the various sources of information which can form the basis for initiating an inquiry— *suo motu*, upon receipt of information through an informant, or through a reference from Government or statutory authority. Section 19(3) provides a list of factors that the CCI shall consider during an inquiry into alleged anti-competitive agreements including cartels. Section 26 lays down the procedure for such an inquiry.

Figure 1 discusses the procedure for inquiry into cartels. If the CCI, on receipt of information believes that there is no *prima facie* case of contravention, it can dismiss the allegations under Section 26(2) without further investigation. If, however, there is a *prima facie* case of contravention, it can direct the Director General (DG) to cause an investigation into the matter under Section 26(1). Once the investigation has occurred, upon the receipt and analysis of information uncovered during the investigation, the CCI can dismiss the allegations under Section 26(6) if it believes that no infringement has taken place. If, however, it concludes that an infringement has taken place, then it can pass an order under Section 27, prescribing remedies and / or monetary penalties.

While the CCI initiated several cartel investigations upon the notification of the horizontal agreements provisions in 2009, most of these investigations reached fruition only in 2011. As of July 31, 2017 final orders/ decisions issued by CCI were 669; it has passed 136 orders that have contained substantive discussions on cartelisation under Section 3(3) of the Act². A total of 55 orders were passed under Section 27 of the Act, where infringements were found after a detailed investigation, usually resulted in financial penalties and/or behavioural remedies. Another 26 orders were passed under Section 26(6) of the Act, where a detailed investigation was initiated by the investigative arm of the CCI due to *prima facie* concerns, but no infringement was found. In addition, there were 55 orders passed under Section 26(2) of the Act, where allegations were set aside by the CCI at the *prima facie* stage itself. In most of these *prima facie* non-infringement cases, abuse of dominance was the main allegation and cartelisation was used as a secondary, alternate line of attack³. Since then, the CCI has maintained a consistent pace in disposing of cases relating to cartelisation. The paper analyses the cases under section 3(3) with a 'limited focus'⁴ where MSMEs were involved.

As per CCI, the highest number of infringement decisions (15) took place in the entertainment sector, which is not usually regarded as being prone to cartelisation. Another unconventional sector is pharmaceuticals distribution, with thirteen (13) cases and eleven (11) infringements. Public procurement through online tendering saw fifteen (15) cases with eight (8)

² CCI (2018), Report of the Special Project on 'Cartel enforcement and competition' for the 2018 ICN Annual Conference in New Delhi, India

³ Op cit

⁴ The paper does not look into various other legal aspects such as evidences in some cartel investigations, appeals, quantum of fines, etc.

infringement findings, and transport (excluding railways) saw fourteen (14) cases with seven (7) infringements findings⁵. In this paper, MSMEs involvement in two sectors, namely, entertainment (film production and distribution) and pharmaceuticals had been examined.

As per CCI, of the 55 infringement orders, a monetary penalty was imposed in 41 cases. The total quantum of monetary penalties imposed by the CCI in these orders was INR 17,160.67 crores. However, the penalties were not evenly distributed between cases. Twelve orders imposed low penalties, with penalties on all opposite parties totalling less than INR 10 lakh. These orders *relate mostly to trade associations of small service providers* in informal sectors being held guilty of collusion. On the other side of the spectrum, there were 9 orders where penalties of over INR 100 crore were imposed⁶.

There are various ways or typologies of forming a cartel by enterprises but the sole objective of every cartel is to make supra natural profits by charging high prices. In case of SMEs, apart from making unreasonable profit, one of the prominent factors which compel SMEs to form a cartel is the competition faced by them from the big players possessing vast resources in the relevant market. To tackle the competition posed by the big players, the SMEs collude by virtually growing their size and power over the market which makes them equipped to compete with the big players.

However, this arrangement also provides them the opportunity to behave unreasonably by charging high prices or limiting supply.

Very often association of enterprises involved in same trade or business provides an effective and reliable platform for enterprises to interact with each other and enforce cartel rules. Hence, it is important to understand that though the membership of industrial association is not *per se* illegal, enterprises can be held guilty if association is used to enforce cartel rules among its members. Despite having various pro-competitive effects, the trade associations due to its very nature are vulnerable to anti-competitive behaviour. The Competition Act, 2002 does not deal with the trade associations differently, and it takes every anti-competitive act in to its account as in case of enterprises.

Associations specially having members from the same market level are more likely to commit anti-trust violation. As associations provide umpteen opportunities for the members to

⁵ CCI (2018)

⁶ CCI (2018)

meet and discuss the concerns of common interest and during such meetings casual discussions relating to business conditions and prices lead to price setting and limiting supply. Associations sometimes also intentionally abuse their position and compel their members to take part in Cartels.

The CCI's decisional practices against trade associations across sectors shows its reliance on direct and circumstantial evidence, such as circulars issued to members, minutes of trade association meetings, depositions of stakeholders and resolutions passed under the charter documents of the trade association in question. In many cases, the charter documents of these trade associations themselves enforced anti-competitive practices. In certain cases, even when the charter documents of the association revealed no such restrictions, circumstantial evidence revealed that the members were engaging in acts of market restriction and boycott. A trend assessment shows that the practice of the CCI, in terms of standard of evidence, has remained largely consistent over the years.

5. CARTELS FACILITATED BY ASSOCIATIONS IN INDIA

Many sectors such as film production and distribution, drugs distribution, etc have been frequently reported to have been affected by cartel activity in India. The film and television sector is characterized by the presence of trade associations for all stakeholders, be they artists, distributors, exhibitors, and sometimes the industry as a whole. Most of these associations have strict rules for members not being allowed to deal with non-members. In all these cases, the CCI has passed similar orders – finding the association guilty of restrictive practices under Section 3(3) of the Act and imposing penalties accordingly.

The film and television sector has been a case in point here. The CCI has initiated and/or acted against enterprises active in this sector on twenty (20) occasions⁷. This sector has also seen one of the first substantive decisions on merits by the Supreme Court of India in *Competition Commission of India vs. Coordination Committee of Artists and Technicians of West Bengal Film and Television & Ors.*⁸ (Bengal Artists Case). The defining characteristic of this sector is the control exercised by trade associations. Most aspects of this industry are unionised,

⁷ CCI (2018)

⁸ Ref. Case No. 01 of 2013

and these associations and unions exercise significant influence on the way in which their constituent members do business. By far, the largest chunk of cases under the Act have been because concerted action by trade associations.

In the case of *Kerala Cine Exhibitor's Association (Informant) vs. Kerala Film Exhibitors Federation and Others*⁹, the informant was an association of 171 cinema theatre owners in Kerala with its members engaged in running theatres and exhibition of cinema under licenses. The member theatres of the informant, were not getting fresh releases due to anti-competitive practices adopted by Kerala Film Exhibitors Federation, Film Distributors Association (Kerala) and Kerala Film Producers Association. The three formed a cartel and were denying members of the Kerala cine exhibitor's release of new films in their theatres. This conduct also deprived the viewers in far flung areas, where only the members of the Informant have theatres, of new films. It was held by the commission that the associations had transgressed their legal contours and indulged in collective decision making to limit and control the exhibition of films in the theatres other than the ones owned by the members of OP 1 and that there is no rational justification for the same.

Similarly, in the case of *Kannada Grahakara Koota (Informant) and Ors. Vs. Karnataka Film Chamber of Commerce (OP) and Ors*, it was found that Kannada Film Producers Association), are involved in the practice of preventing the release and telecast of dubbed TV serials and films in Karnataka. The issue of restriction imposed by associations on the dubbed version of TV serials has been declared anti-competitive by the commission in many other cases as well. In the present case, the DG found out that in Karnataka, no TV serial or film that has been dubbed in Kannada has been released in the past 40-50 years. It can be concluded from the above decisions and from the evidence gathered in the present case that these lead to anti-competitive outcomes as it prevents the competing parties in pursuing their commercial activities. Also, all the opposite parties were associations of enterprise engaged in the production and exhibition of films and TV programs, to be engaged in similar or identical trade, and observed that any agreement between them would fall within the purview of section 3(3) of the Act. It was thus opined that any agreement or joint action taken by the OPs would attract the provisions of section 3(3) of the Act being a horizontal agreement and thus the commission ordered the OPs to stop indulging in such practices and OP 1, 2 and 4 are liable to pay a penalty.

⁹ Case No. 45 of 2012

This case highlights that sometimes SMEs form cartels. A common claim is that SME cartels are indispensable and help them to compete with larger enterprises. This has also been found by CCI in its 2018 study. CCI found that “majority of the infringement findings of the CCI reveal certain striking characteristics that may be common across transitional economies: (i) an extremely strong trade association forms the fulcrum of the cartel; (ii) the participants of these association are often small or micro enterprises or individuals with a low business turnover; and (iii) these participants operate in the informal sector, with a high degree of self-regulation. The association culture in large number of cases may be an attempt at increasing bargaining power and creating a collective insurance policy by small, unsophisticated service providers¹⁰”. Some jurisdictions, allow SMEs to cartelize and compete with larger enterprises but this case shows that the authorities have been very cautious before allowing any SME cartel. It must be ensured that the cartel does not harm consumer interest which happened in the present case as the cartel members indulged in market allocation and did not pass on the benefit they have received by forming a cartel to the ultimate consumers.

MSMEs are also compelled by the associations to become the part of cartel, failing which they would be unable to avail the services of the association. In the pharma sector in India most of the interventions of the CCI have been directed at the pharmaceutical distribution chain and in particular at the All India Organization of Chemists and Druggists (AIOCD) and various other state-level associations of chemists and druggists. In the case of *P.K. Krishna (Informant) vs. Paul Madhavana and Ors*¹¹, the informant was engaged in distribution of medicines manufactured by pharmaceutical companies in Kerala and has a valid drug license. Alkem Labs Ltd. (OP 2) was a pharmaceutical company engaged in manufacturing and marketing of branded and generic drugs and has a huge presence across several therapeutic segments with OP as its Divisional Sales Manager. All Kerala Chemists and Druggists Association (OP 3) is a society registered under the Travancore Cochin/Literary, Scientific & Charitable Societies Registration Act, 1955 formed to maintain fellowship and harmony among chemists. Informant alleged that OP 2 had denied his application to become a stockist as he did not receive a NOC from OP 3 and that OP had initially offered stockist-ship of OP 2. Subsequently, OP 2 stopped supplying drugs to informant without stating any reason. Upon careful observation of evidence, it was observed by the Commission that, appointment of stockists were being

¹⁰ CCI (2018)

¹¹ CCI order in Case No. 28 of 2014

made with the approval of state/district units of the OP 3. Also, it is very clear from the evidence that was earlier submitted by Merck Ltd., which is a third party that, OP 3 unanimously decided to boycott Merck Ltd. by requesting stockists to stop the supply and 95% of the stockists complied with its request too. This clearly shows that the OP has been exercising influence and controlling the supply of medicines. This results in restricting provisioning of goods in the market and thus, in contravention of certain provisions of the act. Accordingly, OP 2 and OP 3 are thus held liable for a penalty.

In the case of *Bengal Chemist and Druggist Association*¹², the CCI imposed a penalty of Rs. 18.38 crores on Bengal Chemist and Druggist Association (BCDA) for their anti-competitive conduct. This was a *suo motu* case by the CCI. In this case, the BCDA an association of wholesalers and retailers was engaged in fixing the price of the drugs in a concerted manner. BCDA directed the retailers to sell the drugs only at MRP determined by it because agreement entered amongst the members of the BCDA. Further, it also carried out vigilance operation to identify the retailers defying the directions given by it and forced the defiant members to close the shop as the punishment for not complying with the directions of the association. The CCI in this case not only penalized the association for its anti-competitive conduct but also additionally held 78 of its senior office bearers to be personally liable for taking part in such anti-competitive conduct of the association. A large number of SMEs were involved in this case and they made use of the association to for a cartel. An association can help run a cartel effectively among hundreds of enterprises as it provides a cost-effective and robust platform to monitor defection and bring together non-defecting enterprises to penalize the defecting enterprise(s). Without association, though not impossible, it would have been very costly for enterprises to monitor behaviour of other enterprises taking part in a cartel.

6. BID-RIGGING

Bid-rigging implies that enterprises collude and decide which enterprise(s) will win the bid. Usually the schemes are used in combination to make it look like a competitive process and ensure that competition is suppressed. Some forms of bid rigging are as follows:

¹² CCI order in Case No 01

- *Cover bidding*: One or more suppliers other than designated winner deliberately submit bids which are higher than designated winner, are too high to be accepted by purchaser or have terms and conditions which are unacceptable to purchaser.
- *Bid suppression or bid withdrawal*: One or more suppliers other than designated winner agree to either abstain from bidding altogether or withdraw a submitted bid before the final stage of bidding process.
- *Bid rotation*: Suppliers come to an understanding to appoint a designated winner for bids on a systematic basis so that each supplier gets a chance to become designated winner on a rotating basis.
- *Market division or market allocation*: Suppliers agree to mark boundaries of their operations to cater to a geographic area or a customer group. They agree to refrain from catering to other geographic areas or customer groups usually by submitting cover bids.

Bid-rigging is prohibited under the Competition Act 2002. Bid-rigging is a main concern for government departments which procure goods and services from the non-state enterprises. Bid-rigging thus not only distorts the competitive outcome of the bids but also amounts to loss of tax payer's money. Bid-rigging is treated seriously under the Competition Act 2002 and it can be said that it is illegal per se for there cannot be any efficiency justifications for bid-rigging. In 2013, CCI decided a bid-rigging case that involved 13 suppliers of CN containers which was used to manufacture 81 mm bomb by Ordnance factories for Defense Sector. As per the Order, the 13 suppliers many of whom were SMEs came together and agreed to have collusive bidding for the supply of CN containers in response to the bid floated by three Ordnance factories based in the State of Maharashtra. All the 13 suppliers quoted same bid prices despite difference in cost of their raw material. Ten out of 13 suppliers had members of the same family in decision making positions and had common directors. Further, several suppliers had submitted their bids from same fax number. A combined penalty of Rs 3, 02, 78,300 (three crores two lakh seventy eight thousand and three hundred) was imposed on 13 colluding suppliers.

In *Re: Cartelization in respect of tenders floated by Indian Railways for supply of Brushless DC Fans*¹³ and other electrical items, the CCI conducted a qualitative analysis of documentary (bid documents), oral (recorded statements) and forensic (call data records and e-mails) evidence. For instance, it compared prices shared through e-mail and prices quoted in

¹³ CCI order in Suo Moto Case No.03 of 2014

the bid documents and corroborated the recorded statements with the call data records. The CCI passed a cease and desist order along with different monetary penalties for different parties. The CCI noted that Pyramid Electronics (Pyramid) was the first one to make a disclosure in the case by extending co-operation and made value addition in establishing the existence of cartel. Therefore, Pyramid's penalty was reduced by 75 per cent under the leniency regime and was fined only INR 1.6 million instead of INR 6.2 million.

In another case, the *Union of India through Secretary, Ministry of Health and Family Welfare*¹⁴, invited bids for supply of pre-fabricated Modular Operation Theatre (MOT) to which 6 parties submitted. One of them, PES Installation's bid was favoured by the committee even though it had technical deficiency. It is reported that the 3 bidders i.e. MPS, MDD and Unniss did not have the exclusive authorisation for integration of MOT. This fact was well known to both MDD and MPS but they still applied to help PES win the bid. Therefore, the acts and conduct of the 3 firms were found to be a part of overall agreement under which they had agreed to bid in a manner that they rotate bids among themselves in different hospitals. Since the Commission has already imposed penalty on the 3 parties in similar case (Case no. 43 of 2010) it did not feel the need to impose any further penalty¹⁵.

7. CONCLUSION

The manifest capacity of Micro, Small and Medium Enterprises (MSMEs) around the world for driving economic growth and development at regional, national and global levels cannot be overemphasized. As India gears up to retrace the high growth path, the MSME sector assumes a pivotal role in driving the growth engine. There is a thrust on 'Make in India' campaign across the nation for making India as a manufacturing hub. This thrust would be incomplete without building an enabling environment for MSMEs. Many small firms which choose to manufacture goods that can be mass-produced suffer from the existential crisis. Large businesses with large-scale operations can manufacture such products more efficiently. MSMEs are often at a disadvantage compared to large firms in situations where size is associated with regular advantages in purchasing, production, marketing and distribution. Often SMEs are suppliers to large enterprises like the ancillary auto products etc. MSMEs are also dependent on large enterprises for their inputs or raw materials and anti-competitive practices in the supply chain impact them adversely and makes them vulnerable to abuse by the large firms. Added

¹⁴ CCI order in Case No. 43 of 2010

¹⁵ CCI Order in Case no. 40 of 2010.

to this is the fact that MSME sector grapples with the high cost of credit, difficulty in hiring skilled manpower, and complex regulatory procedures. It seems to be a matter of concern that a sector with an overwhelming presence in the economy in terms of number of enterprises and employment has been unable to increase its contribution towards total GDP of the economy over the years. This sector is largely unorganised and vulnerable to the dynamic external business environment, and, therefore in the wake of rising competition, it is essential to provide the sector with a level playing field to be able to sustain and thrive in the economy. The Competition policy dispensation provides for recourse measures against many of such practices.

Generally, a cartel is found to be run by the big firms and small firms are compelled to be the part of a cartel having no option other than agreeing to the terms of the big firms. In case of not complying with the big firms there exists a huge likeliness of losing business. But contrary to this, it has also been seen that the MSMEs have themselves taken the first step and acted as the focal point of the cartel. The possibility of MSMEs acting as a kingpin of the cartel cannot be ignored by the commission simply because of the reason that every firm irrespective of the size wants to make as much profit as they can. Also, to cartelize, size of the firms does not act as an impediment. It is the favourable circumstances which play a major role in promoting cartelization and these circumstances do exist in case of MSMEs too.

All the cases discussed above have had a common characteristic, i.e. an extremely strong trade association that forms the fulcrum of the cartel. These associations are often viewed as an attempt at increasing bargaining power and creating a collective insurance policy by small, unsophisticated service providers.

MSMEs participants of the cartel operate in the informal sector with high degree of self-regulation and ineffective government regulation with low turnover. It may be pertinent to note that these MSMEs and associations are often cash strapped. The interaction with SMEs highlighted that the issues can be summarised as follows:

- a) Awareness- A large number of SMEs are still unaware about the Act and there is a lack of technical know-how to ensure compliance of their internal rules and operating procedures with all the relevant laws. Therefore, there is great need of advocacy programmes for both trade associations as well as individual MSMEs in India.

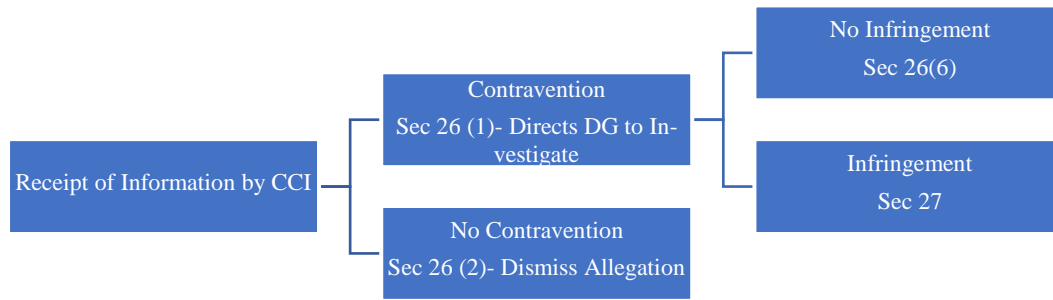
- b) Access: SMEs generally do not have skilled manpower and cannot afford to engage competition lawyers or advisors, who are very expensive. To leverage MSMEs participation in competition law proceedings in India, ease and guidance in reporting various anti-competitive matters to CCI is also needed.

This paper analysed the recent cases of CCI under section 3(3) where MSMEs have been involved to understand and assess how the trade associations of MSMEs in India have acted as a focal point and facilitated cartelisation. The anti-trust regime in India is relatively young and hence most trade associations and SMEs are unaware that the legacy practices which had become of a way of business of them are illegal. Going forward, the developing jurisprudence, coupled with the CCI's increased focus on outreach programmes will help to change attitudes among associations and increase compliance.

REFERENCES

- Hay, Donald A. and Guy S. Liu (1997). The Efficiency of Firms: What Difference Does Competition Make? *The Economic Journal*, 107(442), pp. 597-617.
- KPMG (n.d.). The New Wave Indian MSME-An Action Agenda for Growth <<https://assets.kpmg.com/content/dam/kpmg/pdf/2016/03/The-new-wave-Indian-MSME.pdf>> (20.11.2017)
- Case No. 28 of 2014, P.K. Krishna (Informant) vs. Paul Madhavana and Ors, <<http://www.cci.gov.in/sites/default/files/282014.pdf>> (01.11.2017)
- Case No. 45 of 2012, Kerala cine exhibitors association (Informant) vs. Kerala Film Exhibitors Federation and Others. <http://www.cci.gov.in/sites/default/files/06201245_0.pdf> (01.11.2017)
- Case No. 58 of 2012, Kannada Grahakara Koota (Informant) and Ors. vs. Karnataka Film Chamber of Commerce (OP) and Others. <<http://www.cci.gov.in/sites/default/files/582012.pdf>> (05.11.2017)
- CCI (2018). Report of the Special Project on ‘Cartel Enforcement and Competition’. 2018 ICN Annual Conference in New Delhi, India. <http://www.cci.gov.in/sites/default/files/whats_newdocument/ICN%20SPECIAL%20PROJECT%202018.pdf> ((01.02.2018)
- CCI Order in Suo Moto CN Containers Case No. 04 of 2013, <http://www.cci.gov.in/sites/default/files/04201327_0.pdf> (10.11.2017)
- OECD (2004) Reviews of Regulatory Reform: Germany Consolidating Economic and Social Renewal
- Suo moto Case No. 02 of 2012 and Ref. Case No. 01 of 2013, Bengal Chemist and Druggist Association, <http://www.cci.gov.in/sites/default/files/022012_0.pdf> (20.11.2017)
- The Competition Act 2002 (India). <http://www.cci.gov.in/sites/default/files/cci_pdf/competitionact2012.pdf> (24.10.2017)
- The Micro, Small and Medium Enterprises Act 2006 (India).
- Takahashi, I (2003) “Anti-Monopoly Act Exemptions in Japan”, [http://www.jftc.go.jp/eacpf/05/hanoiTaka .pdf](http://www.jftc.go.jp/eacpf/05/hanoiTaka.pdf)

Figure 1: Procedure for Enquiry into Cartels



PEDAGOGIES IN HIGHER EDUCATION: STRIDING TOWARDS INNOVATION

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ABSTRACT

The present paper explores the need and scope of Pedagogies in the domain of higher education. Pedagogy is often a neglected sphere when it comes to higher education, where more attention is given to the mastery over the content, concepts, skills & training. But, a question often raised is, can the learning outcomes be realised effectively without a sound pedagogy? Often, in professional and technical courses (vocational education), the focus is more on skill development and training by an expert in the field. It is being envisioned in the UGC's report on Higher Education that Indian graduates should not only be competent in their scholastic achievements, rather, they need to be also grounded in their value systems and richness of personality. This requires a transformation of the pedagogy and pedagogical content knowledge (PCK) to bring about quality learning experiences that aims for the holistic development of individuals.

Keywords: Pedagogy, Higher Education, Quality Education, Pedagogical Content Knowledge (PCK)

1. INTRODUCTION

It has been realised that Elementary Education, although an essential phase in the development of children, cannot alone lead to the progress of a nation, as the focus is mostly on literacy and the 3 Rs. Of late, Higher Education is an area that has gained attention both by the Government as well as research institutions all over the Nation. The evidence for this is the recent spurt in the opening of a number of higher education institutions, such as central and state universities,

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colleges, IITs, IIMs, medical and technical institutions, etc. In the past, there have been policies on Higher Education, such as the Radha Krishnan Education Commission (1948-49), University Education Report (1962), Kothari Commission (1964-66) and the National Policy on Education, 1986 that emphasised upon the role of Higher Education in Nation building, resulting in the growth and progress of the country. Also, data shows that the five-year plans proposed by the Government from time to time have yielded positive outcomes in terms of greater participation and enrolment in Higher Education. As a result of these efforts, the statistics reveal that India's Higher Education System is the third largest in the world, next to United States and China. However, when we are aiming and proposing plans for higher education, then the concern is not merely on enrolment and retention, as there are other grave issues to be addressed, such as, the issue of quality, equity, access, and employability. These are the concerns common to both school education and higher education alike as envisaged by the National Policy on Education, 2016. Both, the meaning and the purpose of education is communicated through the pedagogy that is adopted by the teacher in the classroom. The pedagogy is one such overarching element in the whole education process that supports and facilitates not only a conceptual or cognitive growth of the individual learners rather has many implicit facets, such as the development of core values and value system, realisation and comprehension of constitutional ideals, life skills, assuming active citizenship roles, responsibility sharing, sustainable living, character building, etc. that add quality to the education system. Pedagogies adopted in higher education are much more complex and multifaceted as compared to any other level of education, owing to the increasing complexity of the subject matter, as well as higher levels of learning and greater autonomy of teachers.

A concept that is seen to be evolving in contemporary researches in the field of Teacher Education is the need for Pedagogy of Teacher Education. It is based on the premise that the teaching of 'teaching' requires specialised skills, knowledge and abilities that have to be developed and refined by teacher educators as they become more 'expert' at teaching about teaching. Teaching about teaching is, thus, different and distinct from teaching per se. This calls for the need of education of those who teach teachers, i.e. the teacher educators. Taking the argument further, these teacher educators are an integral part of higher education. Then, can the matter of education of teachers of higher education be left unattended? Present day researches compel us to seriously address this question and discuss its ramifications.

Therefore, recognising this fact and dwelling deeper into the understanding of pedagogy at higher education, the present paper underscores this very idea and concept to foster quality education.

2. AIMS OF UNIVERSITY EDUCATION AND STATUS OF HIGHER EDUCATION IN INDIA

It is often said that a University is one that is known for its high academic standards and outstanding contribution to teaching, research, innovation and nation building. It has to gear itself to meet the emerging challenges of the world and the demand of the society in which it is situated. Universities, all over, aspire to achieve excellence in teaching, research and engagement. They are expected to be creators and repositories of new, positive ideas that promote openness of mind. In contemporary times, inculcating values of empathy, ethics, respect for diversity, freedom with responsibility, creativity, humaneness, also become the basic foundation for any University.

Looking at history, it is seen that the Radhakrishnan Commission for higher education also called as the University Education Commission (1948-49) had laid down the aims of University Education or higher education in India. Besides developing the intellect and cognition of the young learners, it asserted that higher education should aim at the development of an integrated personality, where the head, heart and hand are given equal importance. This means that true education should foster training for a profession or avocation alongside the development of the emotional or affective side of the individual and inculcation of a value system. All knowledge should be interconnected and give a synoptic and coherent view of any phenomenon at hand. Knowledge should lead toward self-development and self-identification. An education system, besides developing skills among the individuals, should also strive toward preparing them for the social order of this country, as only then can the individuals actually partake in the national development, as also envisioned by John Dewey (1900) and Mahatma Gandhi (1937). Teaching cannot be a mere transmission of facts or knowledge within the classroom; rather it has to be viewed as a nurturance of the inherent talent and abilities of a diverse group of learners. A teacher should be able to identify the hidden talent and orientation of the learners towards reflective, artistic and practical pursuits, and accordingly design her pedagogy.

With the coming of the University Education Commission, there was a spurt in the number of higher education institutions in the country, such as opening of new colleges, Uni-

versities, technical and vocational education institutions, etc. The number of Universities increased 34 times from 20 in 1950 to 677 in 2014. The sector boasts of 45 Central Universities of which 40 are under the purview of Ministry of Human Resource Development, 318 State Universities, 185 State Private universities, 129 Deemed to be Universities, 51 Institutions of National Importance (established under Acts of Parliament) under MHRD (IITs - 16, NITs – 30 and IISERs – 5) and four Institutions (established under various State legislations). The number of colleges has also registered manifold increase of 74 times with just 500 in 1950 growing to 37,204, as on 31st March, 2013.

Some centrally sponsored schemes have also been launched for the promotion of higher education in the country. Rashtriya Uchchar Shiksha Abhiyan (RUSA) is a Centrally Sponsored Scheme (CSS), launched in 2013 that aims at providing strategic funding to eligible state higher educational institutions. The central funding (in the ratio of 60:40 for general category States, 90:10 for special category states and 100% for union territories) would be norm based and outcome dependent. The following are the salient objectives of RUSA:

- Improve the overall quality of state institutions by ensuring conformity to prescribed norms and standards and adopt accreditation as a mandatory quality assurance framework.
- Usher transformative reforms in the state higher education system by creating a facilitating institutional structure for planning and monitoring at the state level, promoting autonomy in State Universities and improving governance in institutions.
- Ensure reforms in the affiliation, academic and examination systems.
- Ensure adequate availability of quality faculty in all higher educational institutions and ensure capacity building at all levels of employment.
- Create an enabling atmosphere in the higher educational institutions to devote themselves to research and innovations.
- Expand the institutional base by creating additional capacity in existing institutions and establishing new institutions, in order to achieve enrolment targets.
- Correct regional imbalances in access to higher education by setting up institutions in un-served & underserved areas.
- Improve equity in higher education by providing adequate opportunities of higher education to SC/STs and socially and educationally backward classes; promote inclusion of women, minorities, and differently abled persons.

Thus, the country is striving hard towards the achievement of the targets for universal enrolment and quality in higher education by setting up new institutions and allocation of funds. However, this alone is not sufficient to bring about quality in higher education because mere training in skills and attainment of degrees is not the ideal behind higher education, as envisaged in the aims of the University Education Commission. A deeper engagement with the components of higher education, including its content, pedagogy, utility and assessment is required. Beginning with the question of pedagogy, what the present understanding of the term is and how it can address the issue of quality in higher education seems to be the most pertinent question. An attempt is made to seek answers to this question in the present paper.

3. EVOLUTION OF THE CONCEPT OF PEDAGOGY IN HIGHER EDUCATION

Pedagogy is referred to both as a science and an art of teaching, as enunciated by a number of educational philosophers, such as Kant (1724-1804) and Hegel (1770-1831). Both Kant and Hegel added a higher dimension to the understanding of 'pedagogy' per se. It was earlier understood to be within discipline-specific boundaries, but was not viewed from the perspective of moral development. Kant stressed a lot on institutions of education and their organizers as harbingers of moral and character development of individuals towards a meaningful living and responsible citizenry. In his view, Pedagogy should be such that it promotes the development of the natural aptitudes inherent in human nature. Kant relates pedagogy to its emancipatory role by way of critical philosophy which ascribes to the cultivation of reason, which should be mastered by those who are to teach. This particular notion of Kant coincides with the critical pedagogy of the neo-Marxists and post-Marxists.

Pedagogy is an ever evolving concept and has undergone many paradigm shifts since ancient times, the Vedic period and in the present day conception of the term. Educational practices in the ancient period (610 B.C. – 1285 A.D.) mostly comprised of moral instruction, reading and oral learning through repetition. However, Plato's academy (founded in 387BC) encouraged exploratory learning processes, reasoning and questioning. The Medieval period was marked by the influence of the Church over the lives of the people and even the system of education. It was influenced by Aristotelian dialectical thinking and syllogistic reasoning. The early modern age was marked by the rise of the middle class (artisans, merchants, etc.) and bolstered the literacy levels. Liberal studies and non-theological arts subjects gained prominence during this period of 15th century.

The mid-late 18th century is considered to be the late modern period marked by many social, political and economic changes such as capitalism, industrialisation, nation states, science as well as heightened European interests in the rest of the world. The importance of reason, scientific method, positivism and knowledge (Scientific knowledge) particularly gained prominence in attaining human freedom and happiness. The development of Pedagogy since the Modern and late Modern periods may be explained as follows:

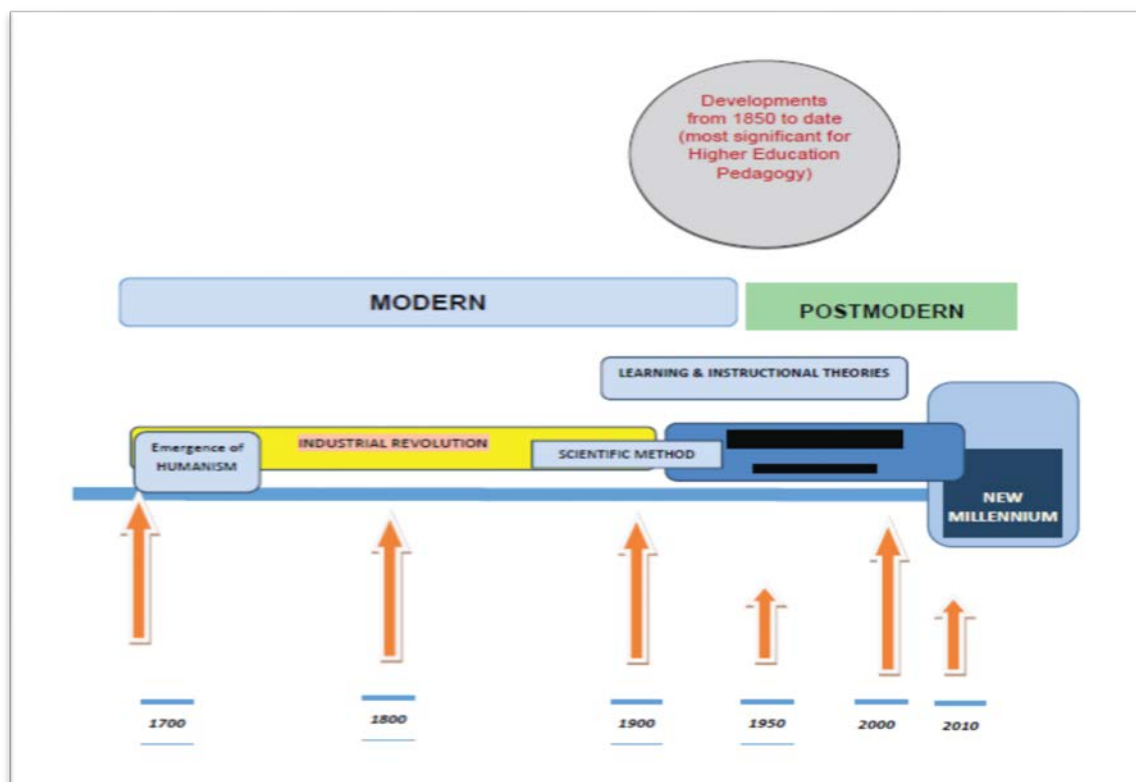


Figure I: Development of Pedagogical Theory and Practice- since late modern and post-modern periods (Source: Raman, 2016)

Of significance in this period is also the writing of Newman (1999) who wrote on the idea of a University. He emphasized training of the mind, and his writings bring out the place for Lecture as a pedagogy in Higher Education. He held that the primary end of education was not the acquisition of useful information or skills needed for a particular occupation in life, but cultivation of the mind. The special fruit of University Education, as he saw it, was to produce what he called, 'the philosophical habit of mind'. Newman was troubled by the increasing compartmentalisation of education, because he believed in a very broad conception of the word 'Education'. According to him, whenever a group of students sit down to eat together, their conversation is likely to act as a sort of Lecture from one to another. Newman stressed

that the essence of University lies in teaching, not merely research, and that a combination of lectures, small group or even individual teaching, is needed to promote intellectual culture and the training of the mind.

The post-modern period was basically a critique of the methods of modernism, and a singular idea of progress and development. It laid emphasis on the role of multiple pathways, diversity, difference and the partiality of all knowledge (Gilbert, 2008).

Freire (1972) vied for a humanistic pedagogy that takes into account the conditions the oppressed (students) have been subjected to by establishing a permanent relationship of dialogue between the oppressor and the oppressed. Freire also rejected the 'Banking Concept' of education, wherein the students are treated merely as recipients, or vessels in which knowledge given by the teacher can be stored as it is without any modification or critique. This kind of an approach is dehumanizing as it subjugates the inherent consciousness of the students as also suppresses their creativity. In Freirean terms, such a person would become an 'adapted' man (p.50) as he is able to fit in the environment that has been created by the oppressor without any resistance. One pedagogical intervention that was highly advocated by Freire, and is also said to be the foundation stone for a libertarian education is the 'problem-posing approach' (p.52), thus connecting men and women with the real-life problems and searching for their solutions by making use of their cognitive abilities and reincarnating their consciousness.

Michael Apple in his *Democratic Schools- Lessons from the Chalk Face* (Apple & Beane, 2006) discussed about the democratic view in education which is not just rhetoric but a way of life, it is much more than mere participation in the class-room conversation. It is an intelligent and reflective appraisal of issues and problems. In order to achieve this goal, the curriculum also needs a revamp so as to provide opportunities to explore and resolve rather than mere rote memorization of facts and information. The curriculum can be called as truly democratic if it enables young learners in decision-making and enterprising skills and gives them the freedom to construct their own knowledge as well as critique the present knowledge content based on valid reasoning and evidences.

Giroux in his work *On Critical Pedagogy* (2011) stated that a *context-specific pedagogy* relates to the students' environment, culture, community and resources. There is a complete rejection of the traditional methods of teaching and pedagogy that denigrate the value of justice, social relations and ethics in the writings of Giroux. Pedagogy has largely been reduced to a 'culture of reproduction' and a transmission of knowledge. A critical pedagogy as envisaged

by Giroux takes into account a sensitization toward the suffering of others by not just bringing the varied experiences into class room life but enabling the learners to also be critical agents who are responsible for the moral or political conflicts of their time.

On the other hand, researches in the area of cognitive psychology also had a major bearing on pedagogy and resulted in marked changes in its approach and understanding, from Behaviourism (Edward Thorndike's Law of Effect & Skinner's Operant Conditioning) in the late 19th century leading to cognitive revolution (a critique of Behaviourism with the ideas of Noam Chomsky, Jean Piaget, Vygotsky and Brunner).

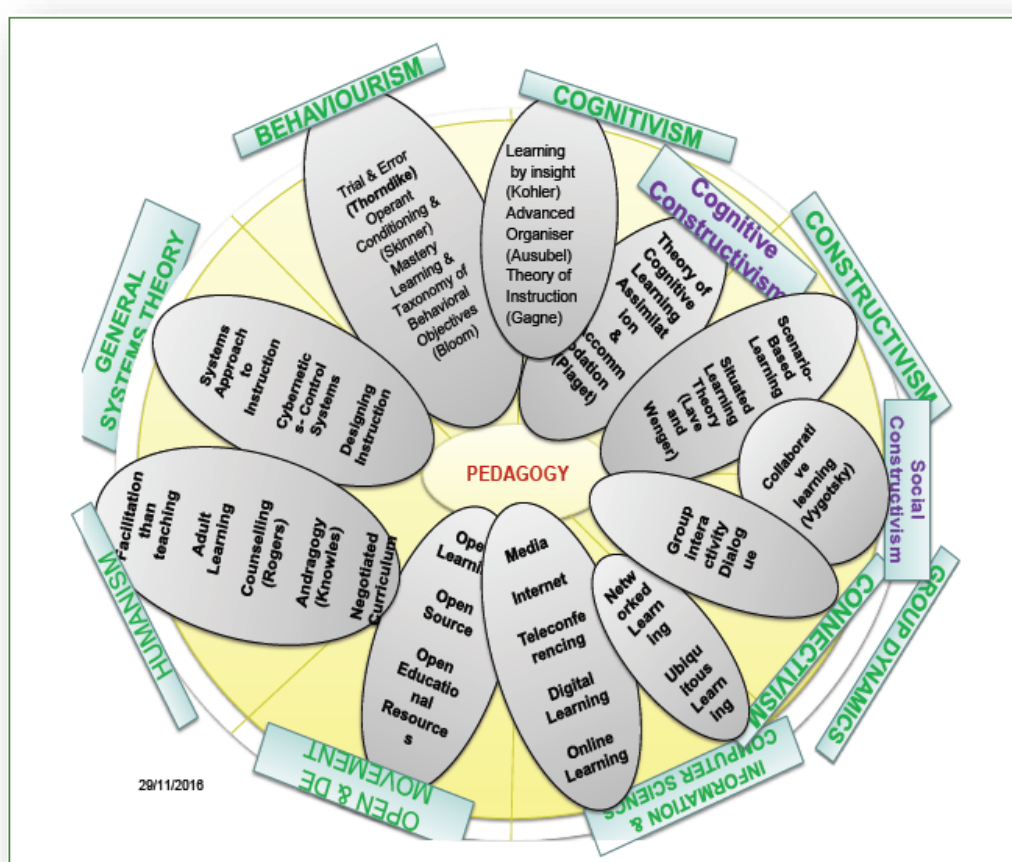


Figure II: Impact of theories & schools of thought from physical and behavioural sciences on pedagogy (Source: Raman (2016))

Further it is seen that, the twentieth and twenty first centuries evidenced two very significant developments in the field of instruction in higher education, such as:

- The advent of the Open Education Movement

- The integration of Information and Communication Technologies.

Thus, it may be asserted that pedagogy is a complex construct and takes into account many social, contextual, cognitive and developmental factors. It is not only concerned with building up of the concept in the minds of the learners but also lends itself to foster a critical understanding in the same in the light of the contemporary scenario.

4. PEDAGOGICAL CONTENT KNOWLEDGE

Pedagogy refers to the art and science of teaching which is 'empty' without an appropriate content. In a way, it may be said that content is the soul of pedagogy and provides it substance and character. They should not be divorced from each other, as it is the content that decides the appropriate pedagogy to create a seamless blend of activities that foster a deepened understanding of the subject matter.

Lee Shulman (1986) in his paper, *Those who understand: Knowledge growth in teaching* coined the term Pedagogical Content Knowledge (PCK) as it refers to the different facets of a teacher's knowledge base. PCK includes the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, demonstrations, examples, explanations, and ways of representing and formulating the subject that makes it comprehensible to others. PCK can also be understood in terms of what makes the learning of specific topics easy or difficult; the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons. Barnett & Hodson (2001) developed a newer model for defining teachers' knowledge and termed it as 'Pedagogical Context Knowledge' that derives its basis in the Shulman's concept about Pedagogical Content Knowledge (PCK) that encompasses it as well. The model employs ways of ascertaining teachers' knowledge and situates them in different contexts such as the class room, the teachers' own belief systems, value structures, language culture, etc. and this list can be non-ending. The study tries to bring out the fact that all such factors are bound to influence the teaching and knowledge repertoire of a teacher, and as such teaching is not a straightforward task. A real teacher is that who tries to bring out all such factors into one's teaching and links it with the present context instead of practicing the age old conventional approaches as dictated by certain documents and texts. Gudmundsdottir (1990) earlier proved that teachers' own value systems put a great impact upon their way of choosing the content specific teaching strategies, way of using the textbook as well as perceptions about teachers' learning needs and difficulties. This was due to the fear that the inclusion

of teachers' own personal values in teaching would subjugate the content for teaching and give it a subjective inclination. That is perhaps the reason why researchers have always separated the two, values and PCK. But, in reality teaching cannot be separated from values as they are very much integral to the processes of teaching. For instance, methods of evaluation, assessment in education, discipline specific value orientation, such as scientific temper, falsifiability of scientific theories, care for environment and all living beings, conservation of natural resources and preservation of wildlife, etc are the values that can be inculcated naturally by studying different subjects.

Zembylas (2007) emphasised upon the role of teachers' emotional knowledge or 'emotional ecology' as it enables them in connecting with the subject matter, the curriculum, the students and the society/context at large. There occur mainly three planes on which emotional knowledge of the teacher influences her teaching: Individual (in connecting with subject matter, attitudes & beliefs about learning & teaching, educational vision and philosophy, emotional self-awareness); Relational (affiliations with students, students' own emotional experiences, caring, empathy, classroom emotional climate, knowledge of students' emotions, social-emotional interactions) and Socio-political (emotional knowledge of the institutional/cultural context, power relations, emotional understanding of curricular deliberations, emotional politics of pedagogies and subject matter discourses). Such an understanding also helps in fostering the affective side of learning and values in education.

4.1 APPROACHES THAT FOSTER INNOVATION AND EXCELLENCE IN TEACHING

In order to adapt to the changing environmental, demographic, economic, cultural, and socio-political conditions, the education system cannot remain a static domain, rather, higher education has to be responsive enough for the influx of changes that are brought about by all these factors. It is education that can help in building a society that is sufficiently cognisant, sensitive and critical minded for approaching newer issues and problems. In fact, education can provide them with the requisite tools, skills and belief systems. For these to happen, the higher education system and its practices have to invent and reinvent strategies that foster innovation and excellence among the teachers as well as learners so as to cope with the impending changes and devise solutions.

The study conducted by Kagan and Tippins (1991) revealed the impact of teachers' beliefs on the structure and content of their teaching. The sample for the study included some

pre-service as well as some in-service teachers and their written case narratives of the classroom experiences. Some patterns could be observed in these narratives when both, the structure, and the content were viewed and analysed simultaneously. The broad themes that emerged from these narratives were: the internal conflict provoked by a problem, a sense of history and ethical concerns that also comprise the basic essence of becoming a teacher.

Another study, conducted by Silver (1999) reviewed and discussed the nature of innovation in higher education teaching and learning. It traced a shift from innovation generated predominantly at the local form to innovation largely directed by the higher education institutions. It argues that the study of innovation demands that questions be asked about the nature and ownership of the innovation, the context and whose interests the innovation serves. The broad categories or typologies under which these innovations in education can be placed include- Individual and group innovations, Disciplinary initiatives, Innovations responding to the educational media, Curriculum-prompted innovation, Institutional initiatives, Systemic initiatives, etc. The pertinent questions that need to be asked before hoisting an innovation should be, in whose interests, and in what policy contexts is the innovation for. There are different ways to bring about this innovation into teaching learning so as to foster quality education and conceptual growth of the learners.

1. Issue-Based Teaching and an Interdisciplinary Approach

Teaching learning should not be subject or discipline-centered as it limits the scope of understanding and application of the concept studied. This does not in any way mean dilution of the academic rigour of a particular subject or discipline but only increasing its disciplinary breadth. For instance, within Science teaching and learning, the Socio-Scientific Issues (SSI) and the ethical issues provide avenues where integration of disciplines of science, social science, humanities and language is sought. Oulton (2004) pointed out that while dealing with controversial issues, multiple viewpoints surrounding these issues need to be regarded well; different ways of interpretation occur depending on different worldviews, values, etc; and an issue can only be resolved once more information becomes available.

The importance of addressing ethical issues in, for instance, Biological Sciences cannot be overemphasised and many researches have delineated their role in enhancing scientific learning and scientific literacy amongst students (Cross & Price, 1996; Pedretti, 2003; D. Zeidler, Sadler, Simmons & Howes, 2005). The curriculum of science needs to be made more flexible so as to incorporate these issues with their true intent and spirit. Case-based approaches to

teaching of moral and ethical issues have also been advocated for basing the scientific concepts into real-life events and happenings (Allchin, 2013). A discussion can be generated in the classroom amongst the students about the possible impact of a particular research or divulsion of an inherent fallacy or myth in the arguments generated for finding out the reasons and logistics behind it. Sometimes the issue is debatable on moral or ethical grounds as and when all the arguments appear to be equally convincing on grounds of human health, safety, wellbeing and growth and development of human society. Addressing controversial and ethical issues in the classroom builds a multi-disciplinary approach about the topic or concept at hand.

2. Addressing Cultural Diversity in classroom teaching learning

Research has indicated that academic and social engagement has indirect effects on student persistence through institutional commitment, the degree to which students were committed to staying at a particular school (Pascarella & Terenzini, 2005). Harper and Quaye (2005) emphasized a dual role wherein the students have a responsibility to be engaged in meaningful and mindful activities, while educators are responsible for providing such activities and experiences that engage them. Educators may attempt to increase cognitive engagement by applying active learning strategies in their courses. For example, Goldberg and Ingram (2001) compared student engagement and performance in two sections of a botany course. The active learning section was designed as a combination of mini lectures and activities, such as concept map-making, problem solving, and categorization tasks. Students in the active learning section performed better on the final exam and also reported being more cognitively engaged. Mazur and colleagues developed a Peer Instruction strategy, a method to engage students actively in their lecture classes. Peer Instruction is a collaborative learning method which involves asking conceptual questions throughout the class period which are answered by the students individually first and then engage in discussions with classmates who have solved the problem in different ways to come up with revised and improved solutions (Crouch & Mazur, 2001; Fagen, Crouch, & Mazur, 2002; Mazur, 2009). Jakee (2011) described providing modified lecture notes to students that did not include the conceptual details or conclusions from the topic taught. Students filled in the important details while listening to the lecture. This promoted more active learning and lecture attendance. Fatokun and Fatokun (2013) adopted problem-based learning, which is another active learning strategy, in their chemistry and mathematics classes. This also involved integration of the two disciplines for solving the problem and interpreting the results.

Thus, the instructor's attempt to design various kinds of constructive engagements for the culturally diverse learners can greatly influence their retention and better learning outcomes.

3. Adopting Critical Pedagogy for a Libertarian Education

Institutions of learning cannot be politically and ethically neutral and are being influenced by the ideologies of the people who constitute them, which implies that critical teachers need to know not only the subject matter of their respective curricular areas, but also the socio-political structure of the organisation. They must be aware about a wide range of experiences that a learner could have gone through one's cultural allegiance, media, music, movies, internet, youth subcultures, power equations and identity formation and the way it operates especially in complex processes of racism, gender/class bias and so on (Kincheloe, 2005). This would certainly transform education into a more concerted and emotional enterprise rather than producing only technical intelligentsia in dearth of care, compassion and concern for fellow human beings. Critical pedagogy also deals with the contestation of the shared beliefs and knowledge structures, rather than presenting them with a narrow simplistic perspective before students, they need to be argued and debated such that the inherent complexity and multiplicity of these knowledge produced by scholars in different fields gets highlighted (ibid.). Kincheloe writes, *"An institution that would not engage students in wrestling with the moral responsibilities accompanying acquaintance with such knowledge is both intellectually and ethically impaired."* This means that learners must be predisposed to such ethical conundrums and dimensions of knowledge so as to develop their critical thinking abilities with the laid down norms of a society and also make decisions that promote happiness, justice and equality. There can be spaces created within the curriculum of higher education, that promote such an understanding of the subject matter, such as case studies, field visits, industry visits, projects, research study, etc.

4. Filling the gaps in Higher Education- Blending Technology

ICT (or Information and Communication Technology) has a major role to play in realising the objectives of Higher Education. ICT and Blended Learning can help in providing equal opportunities for higher education including Technical and Vocational Education and Training (TVET) which is also one of the sustainable development goals (SDG 4),

"Ensure inclusive and equitable quality education and lifelong learning opportunities for all, and to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" by 2030.

According to UNESCO's vision for information and communication technologies (ICTs) in education, these technologies have the potential to build a world without boundaries and to create inclusive knowledge societies. The organisation has been promoting the use of ICTs both in general and as a way of transforming Technical and Vocational Education and Training (TVET) (UNESCO, 2011). ICT has a crucial role to play in expanding access, improving quality and enhancing relevance of TVET through further exploring the potential of technology, including multimedia, online learning, mobile technology, Massive Open Online Courses (MOOCs) and open educational resources (OER) (OEB News Portal, 2016). The various ICT-Based applications in teaching learning include distance education, e-learning, on-line learning, mobile learning, use of Open Educational Resources (OERs), Massive Open Online Courses (MOOCs), Digital Repositories, Simulations, games, etc. Increasing number of teachers in higher education are using both face-to-face and on-line methods of teaching learning to support as well as complement their pedagogies.

E-portfolio is another pedagogic innovation through which students use authentic evidence to document their achievements and skills, and for many other related purposes and uses. The potential of e-Portfolios to support and benefit learning and teaching has been increasingly recognized and understood (Jafari & Kaufman, 2006). On a digital site, e-Portfolios reflect students' problem solving, decision-making, reflection, organization, curation, and critical thinking skills. For educators, they provide forms of teaching delivery, course management, personal development and assessment. Their use in specific subject areas at university level, particularly in health care studies (Garrett & Jackson, 2006) and teacher education (Sherry & Bartlett, 2005), are well documented.

Research indicates that when ICT is effectively integrated into a high-quality environment, it can help deepen students' content knowledge, engage them in constructing their own knowledge and support the development of complex thinking skills (Kozma & McGhee, 2003). Every technology has its specific affordances, affordability and constraints that influence what teachers do with it in classrooms. Understanding these dynamics is not so straightforward and may require rethinking teacher education and teacher professional development (Mishra, Koehler & Cain, 2013).

Teachers must have knowledge of how to structure their lessons, select appropriate technological resources, integrate technological resources with content matter, steer the planned activities, and support the learning process. Many experienced teachers with good content knowledge may not be able to successfully integrate ICT tools in their pedagogy. On the other hand, good expertise in ICTs may not guarantee an effective use of technology in teaching of a particular subject. Similarly there could be those teachers who would have a sound content knowledge of their own subject and are aware of latest technologies available, but might not be knowing how to utilize the potential of available technology in her/his subject learning. Thus, an approach is needed that treats teaching as an interaction between what teachers know and how they apply their knowledge in the unique circumstances or contexts within their classrooms (Mishra & Koehler, 2006).

The TPACK (Technological Pedagogical and Content Knowledge) framework that was developed by Mishra & Koehler can be seen as an extension of Shulman's construct of PCK (Shulman, 1986) to explain how teachers' understanding of educational technologies and PCK interact with one another to produce effective teaching with technology. TPACK represents an understanding based on the complex interactions among content knowledge (CK), pedagogical knowledge (PK) and technological knowledge (TK) that explains meaningful integration of technology in the classroom.

According to Mishra, Koehler & Cain (2013), TPACK is the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies, pedagogical techniques that use technologies in constructive ways to teach content, knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face, knowledge of students' prior knowledge and theories of epistemology, and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones. (p.16)

5. Teaching about Teaching- Unravelling the inherent fallacy

When one talks about pedagogies of Higher Education, then the matter of preparing new teachers cannot be left unattended to, as in this case, the focus merely on the content will not lead to effective teaching learning practices. The present paper has already addressed the nature of pedagogy and its diverse contours, but in the context of teacher education, which is a distinct area of specialization and deliberation, the pedagogies discussed thus far may not suffice. This is because, here, the concerns are more grave and relate to educating prospective teachers about

teaching. As Loughran (2006) mentions in his research work titled, “Developing a Pedagogy of Teacher Education”, teaching about teaching is a highly complex task. And, as he states, it is often a neglected sphere of endeavor in teacher education programmes, where pedagogy of teacher education is equated with modelling of the teaching skills and attitudes that is expected from the teacher interns. But, this is not sufficient, because what is needed at this level is an engagement with the nuances of teaching as a practice and profession, which includes pedagogical reasoning, uncertainties and dilemmas of practice. It also involves how teaching impacts learning, and how learning influences teaching. (ibid.). Thus, being a teacher educator, one needs to reflect upon the prevailing practices, conduct and encourage teacher interns to indulge in research activities so that they can initiate their own learning process based on their experiences.

The section above has delineated some approaches for fostering innovation in realising the aims of Higher Education. The vision of a University as propounded by the University Education Report (1962), aims at providing spaces where knowledge is constructed by the learners through active participation in the teaching learning process and taking up research activities. Universities should nurture academic freedom and serve as think tanks where problems are surmounted and new knowledge is generated. According to an Expert in the field of Education,

“University is a space where individual has a freedom to engage in intellectual activities, enjoys, is threat-free, and gives space to the learners in the overall development. I think one area where we Indians lack is communication skills; we may have good degrees, we may have a mastery over computer technology, which is because we get compartmentalised, many-a-times fluency in language is lacking. Therefore, there should be some literary activities that should be an on-going and continuous feature of any course in the form of co-curricular activities, such as theatre activities. These help to deal with one’s inhibitions and enables one to identify oneself. Such a space should be provided by the University. We should not be making book worms. So, the development of identity, confidence and the moral courage to take decisions should be the primary goal of University Education.”

Thus, the goals of University Education are multifaceted considering the present scenario, where one needs to embrace the changes and adapt or transform the Higher Education System and the pedagogies therein.

5. CONCLUSION

The present paper divulges the pertinent and emancipatory role played by the pedagogies in Higher Education. The paper has helped in addressing pressing issues related to subject-based pedagogies, pedagogies that cut across all the disciplinary areas and pedagogy of teacher education. The manner in which different pedagogies can be interwoven, interspersed and superseded has also been a concern of this paper. And the significance of Lecture as a pedagogy that is needed to promote intellectual culture and training of the mind can also not be undermined. It has been emphasised that content and pedagogy alone cannot lead to a comprehensive and holistic understanding of the subject matter, rather there has to be an implicit and seamless blend, which is referred to as Pedagogical Content Knowledge in the mind of the teacher. The ideas, beliefs and preconceptions of the teachers are as important as the knowledge about the content areas and these need to be taken into consideration for better teaching and learning outcomes. The goal of Higher Education pedagogies, unlike that of school education, is not just on attaining minimum literacy levels. It is on building among the learners, certain skills, attitudes, values and development of identity for creating their own niche in the society and to serve as active citizens of that society. In order to address these challenges, Higher Education needs to be linked with employability and skill generation. This will also help in enabling the individuals to become more independent and financially stable, which would ultimately contribute towards making India self-sufficient and self-reliant. At the same time, the need of the hour is to nurture certain values, ethics and attitudes among the citizens that help in building a cohesive society where cooperation, equality, humanity and empathy prevail as opposed to competition, hatred, envy and selfishness. Higher education and the institutions have to model such kind of ideals and environment, as institutions are the miniature societies and reflect the society at large. This can happen only when the pedagogies support and facilitate such growth and academic freedom. This was also envisaged by the University Education Commission to serve as a place where individuals are not bound by set knowledge structures and disciplines, but are free to explore and transgress the disciplinary boundaries to reach an authentic understanding. Thus, Pedagogy in Higher Education needs to be situated in this wider context.

REFERENCES

- Allchin, D. (2013). *Problem- and Case-Based Learning in Science: An Introduction to Distinctions, Values, and Outcomes*. CBE Life Sci Educ., Fall; vol. 12(3), pp. 364-372. doi: 10.1187/cbe.12-11-0190.
- Apple, M. W., & Beane, J. A. (2006). *Democratic Schools- Lessons from the Chalk Face*. New Delhi: Eklavya Publication.
- Barnett, J., & Hodson, D. (2001). Pedagogical context knowledge: Toward a Fuller understanding of what good science teachers know. *Science Education*, 85, 426–453. doi:10.1002/sce.1017.
- Cross, R. T., & Price, R. F. (1996). Science teachers' social conscience and the role of controversial issues in the teaching of science. *Journal of Research in Science Teaching*, 33(3), 319–333.
- Crouch, C. H., & Mazur, E. (2001). Peer instruction: Ten years of experience and results. *American Journal of Physics*, 9, 970-977.
- Fatokun, J. O., & Fatokun, K. V. (2013). A problem based learning (PBL) application for the teaching of mathematics and chemistry in higher schools and tertiary education: An integrative approach. *Educational Research and Reviews*, 8(11), 663-667.
- Freire, P. (1972). *Pedagogy of the Oppressed*. U.S.A: Penguin Books.
- Garrett, B., & Jackson, C. (2006). A mobile clinical e-portfolio for nursing and medical students, using wireless personal digital assistants (PDAs). *Nurse Education in Practice*, 6, 339–346.
- Gilbert, J (2008) New Zealand Council for Educational Research (NZCER) conference: Making progress — measuring progress, Wellington, pp. 63 – 73.
- Giroux, H. A. (2011). *On Critical Pedagogy*. New York: Continuum International Publishing.
- Goldberg N. A., & Ingram, K. W. (2001). Improving student engagement in a lower-division botany course. *Journal of the Scholarship of Teaching and Learning*, 11, 76–90.
- Gudmundsdottir, S. (1990). Values in pedagogical content knowledge. *Journal of Teacher Education*, 41(3), 44–52.
- Harper, S. R. H., & Quaye, S. J. (2005). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. New York, NY: Routledge.
- Jafari, A., & Kaufman, C. (Eds.) (2006). *Handbook of research on e-Portfolios*. Hershey: Idea Reference Group.

- Jakee, K. (2011). Overhauling technical handouts for active student participation: A model for improving lecture efficiency and increasing attendance. *International Journal of Teaching and Learning in Higher Education*, 23(1), 98-108.
- Kagan, D. M and Tippins, D. J. (1991). How teachers' classroom cases express their pedagogical beliefs. *Journal of Teacher Education*, vol. 42, no. 4, pp. 281-291.
- Koehler, M.J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content (TPACK)? *Journal of Education*, 193(3), 13-19.
- Loughran, J. (2006). *Developing a Pedagogy of Teacher Education- Understanding teaching and learning about teaching*. New York: Routledge.
- Lyons, N. (1990). Epistemological dimensions of teachers' work and development. *Harvard Educational Review*, 60, 159-179.
- Mazur, E. (2009). Farewell, lecture? *Science*, vol. 323, pp. 50-51.
- Mishra, P., & Koehler, M.J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. doi:10.1111/j.1467- 9620.2006.00684.x
- Newman, J. H. (1999). *The Idea of a University*. Washington: Regnery Publishing.
- Oulton, C., Dillon, J., & Grace, M. (2004). Reconceptualising the teaching of controversial issues. *International Journal of Science Education*, 26(4), 411–423.
- Pascarella, E., & Terenzini, P. (2005). *How college affects students, volume 2: A third decade of research*. San Francisco, CA: Jossey-Bass.
- Pedretti, E. (2003). Teaching Science, technology, society and environment (STSE) Education: Preservice teachers' philosophical and pedagogical landscapes. In D. Zeidler (Ed.), *the role of moral reasoning and socioscientific discourse in science education* (pp. 219–239). The Netherlands: Kluwer, Dordrecht.
- Pinnegar, S., & Carter, K. (1990). Comparing theories from textbooks and practicing teachers. *Journal of Teacher Education*, 41, 20-27.
- Raman, S. (Ed.) (2016). *Emerging Trends in Higher Education Pedagogy*. California: Wawasan Open University Press.
- Rowley, J. & Bennett, D. (2016). ePortfolios in Australian higher education arts: Differences and differentiations. *International Journal of Education & the Arts*, 17(19). Retrieved from <http://www.ijea.org/v17n19/>.
- Sherry, A. C., & Bartlett, A. (2005). Worth of electronic portfolios to education majors: A 'Two by four' perspective. *Journal of Educational Technology Systems*, 33, 399–419.
- Shulman, L. (1987). Knowledge and Teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.

Silver, H. (1999). Managing to innovate in higher education. *British Journal of Educational Studies*, Vol. 47, No. 2 (Jun., 1999), pp. 145-156.

Zeidler, D., Sadler, T., Simmons, M., & Howes, E. (2005). Beyond STS: A research-based framework for socioscientific issues education. *Science Education*, 89, 357–377.

Zembylas, M. (2007). Emotional ecology: The intersection of emotional knowledge and pedagogical content knowledge in teaching. *Teaching and Teacher Education*, 23, 355–367.

A Decomposition Analysis of the Change in Nutritional Outcomes of Girls between 1992-3 and 2005-6 in Rural India

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ABSTRACT

Not only is the prevalence of child undernutrition high, improvements have been slow relative to what might be expected given India's remarkable progress in improving the rates of economic growth. This paper examines how nutritional outcomes have unfolded over time for young girls in rural India and seeks to answer to what extent can the improvement over time be attributed to (a) changes in distribution of covariates overtime and (b) differences in returns to covariates over time using counterfactual-based decomposition techniques at the mean (Oaxaca-Blinder (OB)) and across the percentiles (Machado-Mata (MM)). The results suggest a trend of declining total change as one moves from lower to higher percentiles of the anthropometric distribution with significantly larger improvements for the relatively undernourished girls. The contributions of the covariate and coefficient effects differ across the distribution depending on the anthropometric outcome we consider. For the relatively undernourished girls, however, both the components are important.

Keywords: child nutrition, anthropometric outcome, quantile regression, decomposition

1. INTRODUCTION

Very little of India's remarkable progress, as apparent in its increasing rates of economic growth, has translated into improving its anthropometric performance in lowering the rates of

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child undernutrition.² India continues to be home to more than a third of the world's stunted children (Haddad *et al.*, 2015). Estimates from the recent nationwide Rapid Survey on Children (RSOC) classify about 39 percent of Indian children under five years of age as stunted and 30 percent as being underweight (RSOC, 2015).

Equally well documented is the preference for a male child amongst Indian parents. Both the sex-ratio and mortality rates for the under-five children are skewed in favor of boys: 91.9 girls for every 100 boys (Census of India, 2013) and 107.5 girl-child deaths for every 100 boy-child deaths (UN Report, 2015). Studies find evidence of girls being less likely to be fully vaccinated and getting immunization against diseases relative to boys which gets reflected in excessive female child mortality (Oster, 2009; Borooah, 2004). Discrimination is also seen among infants with girls being breastfed for shorter duration with long intervals in between, and over a short period than boys (Das Gupta, 1987).

Against this backdrop, this paper attempts to document how nutritional outcomes have unfolded over time for girls in India. It is argued that undernourished girls are more likely to become undernourished mothers and have children born with low birth weights (UNICEF, 2013). Also, given the higher prevalence of undernutrition in rural than in urban areas (Arnold *et al.*, 2009), the analysis is restricted to young girls in rural India. As detailed below, this study attempts to identify what factors are associated with undernutrition of girls in a given cross-section, and then go on to use decomposition techniques to try and identify which of the socio-economic characteristics seem most associated with the observed change in outcomes between 1992/93 and 2005/06.

Table 1: Prevalence of undernutrition among rural girls, by NFHS round

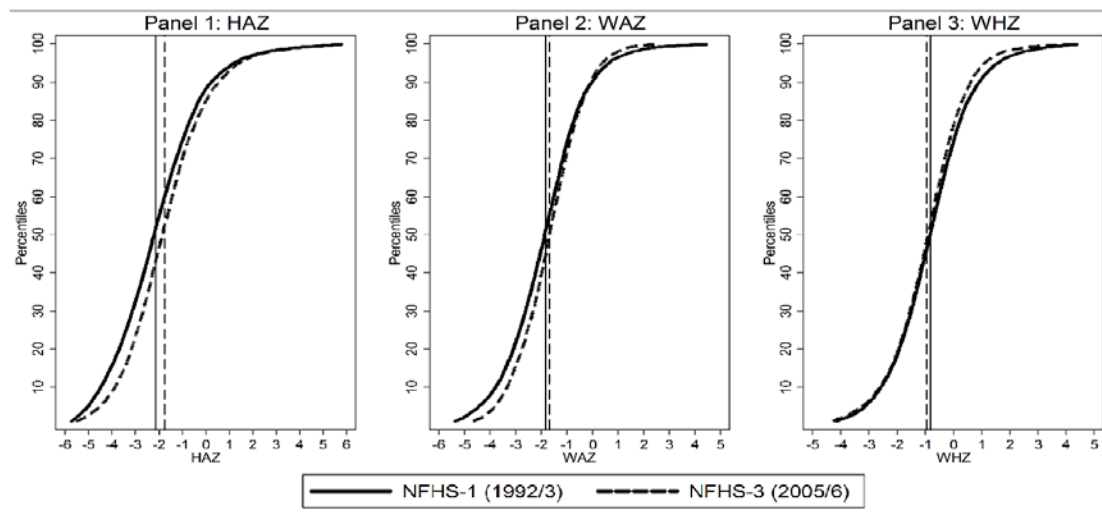
| | Stunting (%) | Underweight (%) | Wasting (%) |
|--|--------------|-----------------|-------------|
| NFHS-1 (1992/93) | 55 | 46 | 18 |
| NFHS-3 (2005/06) | 46 | 40 | 19 |
| Change (in percentage points) ^a | 9*** | 6*** | -1 |

² The three most commonly used anthropometric indices (expressed in terms of z-scores) to assess child nutritional status are height-for-age z-score (HAZ), weight-for-age z-score (WAZ) and weight-for-height z-score (WHZ) (Waterlow *et al.*, 1977). The z-scores employed in this analysis are calculated using the child growth standard developed by World Health Organization (WHO) Multicentre Growth Reference Study (2006) which uses a sample of approximately 8500 children under five years (healthy breastfed infants and young children) from six countries from different cultural and ethnic backgrounds. Stunting (based on HAZ), underweight (based on WAZ) and wasting (based on WHZ), are each defined as their respective z-score being less than -2 standard deviations (SD) units.

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [% undernourished in 1992/93 - % undernourished in 2005/06]. The data refer to young girls under four years of age; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table 1 provides estimates of prevalence of stunting, underweight and wasting among rural girls below the age of four for the first (1992/93) and third (2005/06) rounds of the National Family and Health Survey (NFHS).³ We see that over the thirteen year period, stunting and underweight prevalence fell by 9 and 6 percentage points respectively, and in 2005/06 their levels are still high at 46 and 40 percent respectively.⁴ The change in the prevalence of wasting is insignificant, and in 2005/06 its level is at 19 percent.⁵ Since weight-for-height z-score (WHZ) can be expressed as the ratio of weight-for-age z-score (WAZ) and height-for-age z-score (HAZ), the insignificant change is a result of similar proportionate declines in the prevalence of being underweight and the prevalence of stunting. However, a comparison based on proportions alone does not reveal whether a similar change has occurred at different percentiles of the anthropometric distributions. Panels 1, 2 and 3 of Figure 1 plots the distribution of the HAZ, WAZ and WHZ outcomes, respectively.



Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: The data refer to young girls under four years of age.

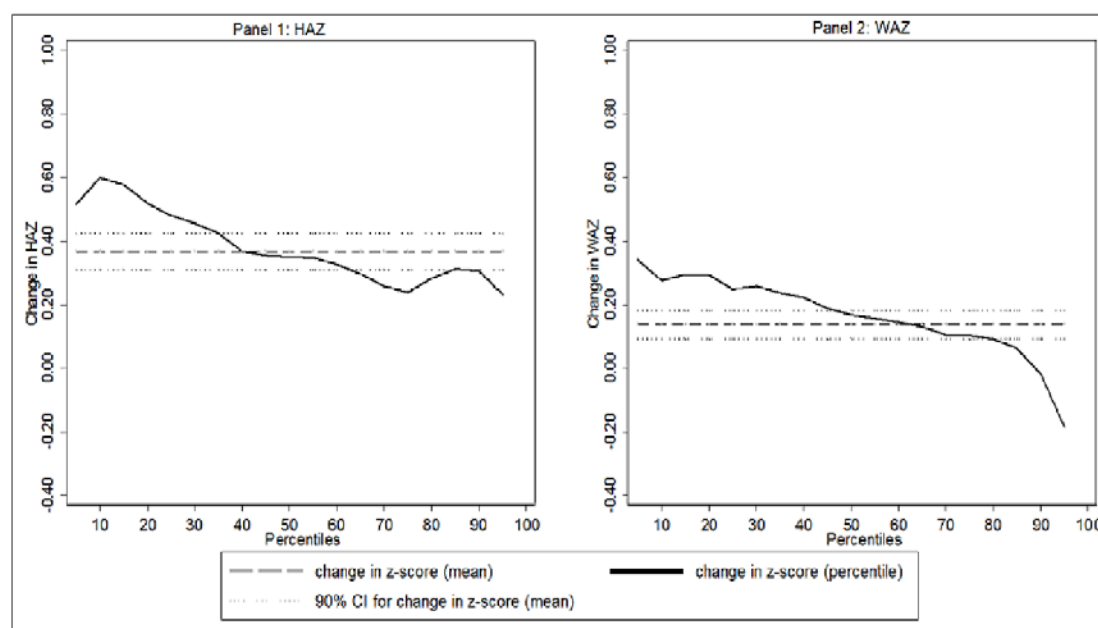
Figure 1: Distribution of anthropometric outcomes of rural girls

³ To make the datasets comparable across the two rounds, we restrict our analysis to girls below age four. More on this in Section 2.3.

⁴ The null hypothesis that the proportion of girls stunted (or underweight) in 1992/93 is equal to the proportion stunted (or underweight) in 2005/06 is rejected using the test for differences in proportions.

⁵ The null hypothesis that the proportion of girls wasted in 1992/93 is equal to the proportion wasted in 2005/06 cannot be rejected using the test for differences in proportions.

Panel 1 shows that the HAZ curve for 2005/06 lies everywhere to the right of that for 1992/93 except beyond the 90th percentile where the plots overlap. This implies that the HAZ measure has improved over time for all percentiles up to the 90th.⁶ Moreover, we see significantly greater improvements for stunted (HAZ < (-2)) and severely stunted (HAZ < (-3)) girls as compared to healthy (HAZ between (-2) and (+6)) girls. In Panel 2, which does the same for WAZ, most of the improvement is below the 70th percentile.⁷ We see in Panel 3 that there is no worsening of WHZ for the lower percentiles up to the 60th percentile, beyond which there appears to be a worsening of WHZ over time.⁸ In the rest of this paper, we only focus on the first two measures because, as with the mean, the worsening of WHZ for higher percentiles simply means that the improvements in WAZ have not been commensurate with the improvements in HAZ for those percentiles. To see distinctly the differences in the extent of improvement across different percentiles, Panel 1 and 2 of Figure 2 plots the change across the distribution of HAZ and WAZ measures between the two NFHS rounds. Table 2 provides the summary statistics for the two outcomes of interest.



Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a-Change in anthropometric outcome is calculated as [z-score in 2005/06 - z-score in 1992/93]. The data refer to young girls under four years of age.

Figure 2: Change in the distribution of anthropometric outcomes of rural girls

⁶ The null hypothesis that the distribution of HAZ in 1992/93 is equal to the distribution in 2005/06 is rejected at 1 percent level of significance using the Kolmogorov-Smirnov (KS) test of equality.

⁷ The null hypothesis that the distribution of WAZ in 1992/93 is equal to the distribution in 2005/06 is rejected at 1 percent level of significance using the KS test of equality.

⁸ The null hypothesis that the distribution of WHZ in 1992/93 is equal to the distribution in 2005/06 is rejected at 1 percent level of significance using the KS test of equality.

Table 2: Summary statistics of anthropometric outcomes of rural girls, by NFHS round

| | Height-for-Age Z-scores | | | Weight-for-Age Z-scores | | |
|-----------------------------|-------------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|
| | NFHS-1 (1992/93) | NFHS-3 (2005/06) | Change ^a | NFHS-1 (1992/93) | NFHS-3 (2005/06) | Change ^a |
| Mean z-score | -2.09 (0.02) | -1.73 (0.02) | 0.37*** | -1.87 (0.02) | -1.73 (0.02) | 0.14*** |
| 10 th Percentile | -4.48 | -3.88 | 0.60*** | -3.78 | -3.5 | 0.28*** |
| 50 th Percentile | -2.21 | -1.86 | 0.35*** | -1.87 | -1.7 | 0.17** |
| 90 th Percentile | 0.22 | 0.53 | 0.31*** | -0.03 | -0.04 | -0.01 |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a-Change in anthropometric outcome is calculated as [z-score in 2005/06 - z-score in 1992/93]. The data refer to young girls under four years of age. Standard errors for mean z-score are given in parentheses; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

The change between the two rounds shows a declining trend as we move along the two distributions from lower to higher percentiles, and is far from being constant. Clearly, the change for the lower percentiles lie outside the confidence interval for the mean change for both the anthropometric outcomes indicating that the average change is not representative of the change for the relatively undernourished girls.⁹ Calculating the magnitude of change from Table 2, we find that the improvement in the mean HAZ is about 18 percent of the mean HAZ in 1992/93. However, the improvement at the 10th percentile is higher, and at the 90th percentile lower, than that at the mean. The improvements stand at 28 percent and 14 percent of the mean HAZ in 1992/93, at the 10th and 90th percentiles, respectively. The improvement in the mean WAZ is about 7 percent of the mean WAZ in 1992/93. The corresponding value at the 10th percentile is 13 percent of the mean WAZ in 1992/93, while the change is not statistically significant at the 90th percentile.

In the backdrop of the variation in changes across different percentiles of the HAZ and WAZ distributions, the first objective of this paper is to identify the principal covariates that affect the anthropometric performance of young girls in rural India at the mean, and to examine if these vary by percentiles—focusing more at the lower quantiles. The data set is the unit record data from first and third rounds of the NFHS and we use ordinary least squares (OLS) and

⁹ An important point to note here is that the change is also the OLS and QR coefficient of the round dummy in a regression of HAZ and WAZ evaluated at the mean and different percentiles, without any other control. The methodology of QR coefficient is discussed later. For now we can simply see the change as the difference in the z-scores of the two rounds, at each percentile.

quantile regression (QR) to examine this question. A large set of child, mother and household specific covariates, detailed later, are used to examine whether the influence of these covariates differ over the distributions of the two outcomes in a given round, and whether at a particular percentile the influence of these covariates has changed between the two rounds. The results indicate that many of the covariates, considered, show expected signs as predictors of HAZ and WAZ outcomes. However, there is a distinct decline in the returns to many of the factors influencing child undernutrition on average, and markedly more for the WAZ distribution.

The second objective of this paper is to decompose the change in anthropometric outcomes into the “covariate effect”—attributable to change in the endowment of covariates and the “coefficient effect”—attributable to change in the returns (parameter estimates) to the covariates. The aggregate decomposition into the two effects at the mean is carried out using Oaxaca-Blinder (OB) methodology (Oaxaca, 1973; and Blinder, 1973); and Machado-Mata (MM) technique (Machado and Mata, 2005) is used to decompose the change at different percentiles. We also carry out the detailed OB decomposition of the factors contributing to the overall change in the mean HAZ and WAZ. For both HAZ and WAZ, we observe a trend of declining total change as we move up along the anthropometric distributions with significantly larger improvements for the relatively undernourished girls, but the contribution of the two effects, across the distribution, differ depending on the anthropometric outcome we consider. For the relatively undernourished, however, the improvements are driven by both the effects.

The rest of the paper is organized as follows. Section 2 presents a brief review of literature. Section 3 describes the data used in this study. Section 4 explains the methodology—the quantile regression technique, the Oaxaca-Blinder method and the Machado-Mata method of decomposition. Section 5 provides the results of the regression and the decomposition analyses. Section 6 concludes.

2. REVIEW OF LITERATURE

A large body of research documents the various covariates contributing to poor nutritional outcomes among children in India: poor health infrastructure (Paul *et al.*, 2011); age clustering¹⁰ (Griffiths *et al.*, 2007); higher birth order (Mishra *et al.*, 2004); declining nutritional intake (Gragmolati *et al.*, 2005); poor maternal characteristics (Borooah, 2005); poor

¹⁰ A child lives in a household which is a part of a community that operates under some state or national policy. Thus, all the levels within the societal hierarchy play a role in influencing child nutrition outcomes through genetic, behavioural and environmental factors.

economic status of the household; and poor sanitation (Spears, 2013). Although not discussed in detail, these studies guide the choice of covariates considered in this paper. The review below focuses on studies that apply decomposition techniques to study inter-group differences in child nutritional outcomes in the Indian context, most of which use the NFHS dataset.

Tarozzi and Mahajan (2007) were among the first to test for gender differences in improvements in the distribution of anthropometric outcomes using first order stochastic dominance. Using data from the first two rounds of the NFHS, they find that WHZ improved for both boys and girls, but the improvement for boys is almost double that for girls. The HAZ measure showed worsening for girls but slight improvement for boys. They also find significant regional differences in change in anthropometric performance with boys performing relatively better than girls in rural areas of North and East India. They decompose the change in the probability of stunting using the OB method and find that on average, the coefficient effect explains the entire decline in stunting observed between the two rounds and the covariate effect is insignificant. This pattern is even more dominant in rural areas. However, they do not find any gender differences in the decomposition exercise. Tarozzi (2011) updated the distributional analysis of Tarozzi and Mahajan (2007) by using the third NFHS data (2005/06). In this paper he finds that the boy advantage, as seen from greater improvement for boys in the WHZ and HAZ distribution between the first two rounds, does not extend between the second and third round of NFHS. However, he does not decompose the change observed in undernutrition as was carried in the previous paper.

A number of other studies use OB decomposition to identify factors which influence the gap in child nutritional outcomes between different groups at the mean: rural and urban gap as well as the urban poor and non-poor gap. For instance, using data from the first and third rounds of the NFHS, Kumar and Singh (2013) findings on the OB decomposition exercise on poor and non-poor urban households reveals that children belonging to poor households are undernourished due to lower utilization of health care services and poor paternal characteristics like poor health of the mother and lower parental education. Their study suggests that improving public services such as health care, and educating mothers among urban poor can purge the negative impact of poverty on childhood undernutrition. Using the same rounds of the NFHS data, Kumar and Kumari (2014) decompose the rural–urban differential in child nutrition in India over time. They find that the economic status of the household and parental education are the most significant factors explaining the widening gap.

There are a few studies in the literature which focus on comparisons of the entire distribution of outcomes. For instance, Kandpal (2011) finds that the Integrated Child Development Scheme (ICDS) significantly reduces chronic malnourishment and has significant treatment effects among the lower percentiles, an impact which becomes insignificant when based only on average outcomes.

Using OB at the mean and MM decomposition across the HAZ distribution for NFHS-3, Cavatorta *et al.* (2015) decompose the disparity in HAZ outcomes of children in rural India between Tamil Nadu (a good performer) and five other poor performing states (Bihar, Uttar Pradesh, Madhya Pradesh, Odisha and Gujarat). From the OB decomposition they conclude that most of the differential is on account of large coefficient differences between Tamil Nadu and other states, except Odisha where they find that it is the covariate difference largely that explains the difference in HAZ outcome between the two states. Their results are enriched by MM decomposition where they find that the gaps are much higher at the bottom tail of the distribution.

Bhalotra *et al.* (2010) decompose the Hindu-Muslim gap in the prevalence of stunting and wasting for all three rounds of NFHS using a non-linear decomposition method developed by Fairlie (2006). They find that 29 percent of the difference in stunting is explained by maternal education, maternal age at parturition, and child's birth year, while 20 percent of difference in wasting is explained by maternal education and state. However, this method can only be used for binary outcomes and is not applicable to study group differences in any continuous outcomes as used in this study.

This paper contributes to the literature on the analysis of child nutritional outcomes in India and addresses an important question of the drivers of the changes in undernutrition among young girls in rural India. In doing so it attempts to make use of quantile regression and decomposition techniques. Its quantile regression approach shows clearly where in the distribution the improvements have been, and how the explanatory variables have affected the outcomes at each quantile. It extends the distributional analysis done by Tarozzi and Mahajan (2007) to the decomposition exercise using the MM technique (that is, decomposing the change at different percentiles of the anthropometric distributions). Studies in the past have mainly used the OB technique to identify trends. This study, however, not only helps to identify the trends that may be missed by examining changes at means, but also examines the relative contribution of the covariate and coefficient effects across the anthropometric distributions. In

addition, the focus is on rural girls which represents a marginalized section of the Indian society. Undernutrition is measured in terms of WAZ and HAZ. WAZ is a short term measure of health: deficiencies in nutrition, owing to, say, drought-like conditions, can be overcome in the short term with improved nutrition. Improvements in the longer term measure, HAZ, is harder to explain. To carry out the analysis, we use the first and third rounds of NFHS as an extension to the Tarozzi and Mahajan (2007), which used the first two rounds of NFHS data, and Tarozzi (2011) which compared the second and the third rounds.

3. CONCEPTUAL FRAMEWORK, DATA SOURCE AND VARIABLE DESCRIPTION

The conceptual framework on the drivers of child nutrition is taken from UNICEF (1998). The factors can be classified into four categories: (i) immediate causes which consists of food intakes and exposure to infectious diseases, (ii) child-specific causes which includes child feeding patterns, immunization and health care, and hygiene behavior, (iii) social and economic causes which includes household's economic status, maternal education, food availability, and lastly (iv) basic causes which includes political, economic and ideological environment, including, for example, caste. The variables included in our analysis are drawn from this framework, and also include those identified as being important in the literature reviewed above. Additionally, we include only those variables which are common to the rounds of NFHS data used in this paper. These are: child specific covariates— age (in months), birth order, percentage of the required vaccines received¹¹; mother specific covariates— age at the time of first birth, education level; and household specific covariates—access to improved sources of drinking water and improved toilets, caste, household size and economic status (proxied by an indicator of asset holdings which is constructed using the weights provided for the construction of a wealth index (Smits and Steendijk, 2013)).¹²

As already stated, we use the NFHS unit record data for this analysis. The first round of NFHS was conducted in 1992/93; with subsequent rounds in 1998/99 and 2005/06, and most recently

¹¹ Required vaccines measure the total number of vaccines a child of a given age should receive as per the guidelines given by Indian Academy of Pediatrics Committee on Immunization (IAPCOI). Percentage of the required vaccines received is calculated based on the responses given for Polio, Diphtheria, Tetanus, Tuberculosis and Measles only. This list is not exhaustive but for consistency we use information on vaccines available for both the rounds. For a complete list of immunization and vaccines for young children see the recommendations given by IAPCOI (2008).

¹² It is the first strictly comparable asset based index which can also be used to compare economic status of households across time.

in 2015/16. The data for the fourth (latest) round is still not available for all the states. We, for this paper, use the first and the third rounds only.

There are some differences across the two rounds of NFHS considered in this paper. For instance, NFHS-1 collected anthropometric data for children below four years of age, while NFHS-3 did so for children below five years. In addition, heights were not measured for five states in NFHS-1 because of lack of appropriate height measuring tool.¹³ The two rounds also differ in their definition of selection of the respondent. For NFHS-1, all married women between ages 13 and 49 were interviewed whereas for NFHS-3, all married and unmarried women between ages 15 and 49 were interviewed. Thus, to make comparisons across the two rounds, the working sample for the analysis is confined to girls below four years of age, who were born to married women between ages 15 and 49, in the states in which heights were measured in both the rounds.¹⁴ Also, as stated earlier, the analysis is confined to rural India. The resulting sample has 17482 observations in 1992/93 and 15504 observations in 2005/06. Further, we have followed the WHO (2006) guidelines to exclude children for whom the reported anthropometric measure is not biologically feasible: namely, $HAZ < (-6)$ and $HAZ > (+6)$; $WAZ < (-6)$ and $WAZ > (+5)$; $HAZ < (-3.09)$ and $WAZ > (3.09)$; and $WAZ < (-3.09)$ and $HAZ > (3.09)$. These extreme z-scores are indicative of plausible measurement error in height and weight or data entry errors and are therefore, dropped.¹⁵ After deleting observations with invalid anthropometric data, we are left with 10008 NFHS-1 and 8107 NFHS-3 observations on weights and 9696 NFHS-1 and 7911 NFHS-3 observations on heights.

There are also issues concerning the extent of information missing on the explanatory variables. For instance, information on vaccines received by the child is missing for 5 percent of the data. We test and find that vaccine information is completely missing at random and therefore, drop these observations from the analysis. Similarly, information on caste of the household head is missing for 372 (4.7 percent of NFHS-3 observations) observations in NFHS-3. We club them with the other backward caste (OBC) and others caste category.

¹³ These states are Andhra Pradesh, West Bengal, Himachal Pradesh, Madhya Pradesh and Tamil Nadu.

¹⁴ We exclude girls who were born to never married women which constitute 0.12 percent of the sample in 2005/06.

¹⁵ In addition to the invalid, and therefore dropped, observations on height and weight, there is a possibility that in general the anthropometric data is measured with error. To the extent that our focus is the change over time, assuming that both survey round suffer from the same kind of measurement error, a comparison over time should not be affected by measurement error in the dependent variable.

Table 3: Summary statistics for child, mother and household covariates, by NFHS round

| Covariates | NFHS-1 (1992/93) | NFHS-3 (2005/06) | Change ^a |
|--|---------------------|---------------------|---------------------|
| <i><u>Child Characteristics</u></i> | | | |
| Age (in months) | 22.32 (0.14) | 23.10 (0.16) | 0.8*** |
| Birth order (as % of total children) | | | |
| Birth order =1 | 26 (0.01) | 29 (0.01) | 3*** |
| Birth order =2 ^b | 24 (0.004) | 26 (0.005) | 2** |
| Vaccines received (as % of required vaccines) ^c | 45 (0.45) | 65 (0.41) | 20*** |
| <i><u>Mother Characteristics</u></i> | | | |
| Age at first birth (in years) | 19.06 (0.03) | 19.71 (0.04) | 0.66*** |
| Education (as % of all mothers): | | | |
| At most primary | 16 (0.01) | 15 (0.01) | -1** |
| Above primary ^d | 19 (0.003) | 36 (0.005) | 17*** |
| <i><u>Household Characteristics</u></i> | | | |
| Drinking Water Facility (as % of total households): | | | |
| Improved drinking water ^e | 68 (0.01) | 73 (0.01) | 5*** |
| Toilet Facility (as % of total households): | | | |
| Improved toilets ^f | 19 (0.003) | 30 (0.005) | 11*** |
| Wealth Index ^g | 26.56 (0.19) | 28.79 (0.24) | 2.23*** |
| Caste (as % of total households): | | | |
| Scheduled caste | 14 (0.003) | 17 (0.004) | 3*** |
| Scheduled tribe ^h | 15 (0.003) | 22 (0.005) | 7*** |
| Household Size | 8 (0.04) | 7 (0.03) | 1*** |
| No. of observations | 9794 | 7787 | |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change in covariate is calculated as [average endowment of a covariate in 2005/06 – average endowment of a covariate in 1992/93].

b- Birth order 3 or higher is the omitted category.

c- Required vaccines measure the total number of vaccines a child of a given age should receive as per the guidelines given by Indian Academy of Pediatrics Committee on Immunization (IAPCOI). For consistency, we use information available on vaccines for both the rounds and therefore, calculate the percentage based on the responses given for Polio, Diphtheria, Tetanus, Tuberculosis and Measles only. For a complete list of immunization and vaccines for young children, see IAPCOI (2008).

d- Illiterate mother is the omitted category.

e- Improved water facility takes a value 1 if drinking water is from either of the following sources: piped water, tube well, protected well or a spring, bottled water, tanker truck or a cart with small tank. It takes a value 0 for poor drinking water source (omitted) which include public well, public hand-pump, open spring, river, stream, pond, lake, dam, rainwater and 'other' as the reported category.

f- Improved toilets takes a value 1 if the household has access to a private flush or a private pit toilet. It takes a value 0 for poor toilets (omitted) which includes shared toilets, public toilets and no toilet.

g- Wealth Index is constructed using the weights given to obtain an asset based index which can be used to compare economic status of households across time (Smits and Steendijk, 2013).

h- Other backward caste (OBC) or others caste is the omitted category.

The data refer to young girls under four years of age. Standard errors reported in parentheses; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table 3 provides the summary statistics of all the covariates used in this study and also shows the change in covariates between the two rounds.¹⁶ We see substantial improvement over the thirteen year period in the mean endowment of many key covariates associated with child anthropometry.¹⁷ The most prominent ones are: increase in the percentage of vaccines a child receives (from 45 percent to 65 percent), increase in the proportion of mothers having more than primary education relative to no education (from 19 percent to 36 percent). Improvement is also witnessed in the proportion of households having access to improved source of drinking water (from 68 percent to 73 percent), and increase in households having access to improved toilet facility (from 19 percent to 30 percent), relative to poor quality. Also, over the two rounds, the economic status of households has improved as captured by the increase in the index value over time, and the average household size has declined by one person.¹⁸

¹⁶ There are covariates that should have been included in the analysis but couldn't be accounted for as sufficient data on them doesn't exist. Either they were asked in just one of the two rounds, or were completely missing from both the rounds. These include nutrient/food intakes of the child, mother's anthropometric data, policy variables and community characteristics.

¹⁷ Test for statistical significance is done for all the covariates: Test of differences in proportions to check for change in the categorical covariates, and test for differences in means for continuous covariates.

¹⁸ There are obvious concerns that children in our sample with valid anthropometric may constitute a biased sub-sample of all children. We compare the children with valid anthropometry and children who are dropped. Using a probit regression we find that we are likely to drop children of lower birth order, born to illiterate mothers of younger age, and more likely to come from relatively wealthier households having access to improved toilets. We do not correct for sample bias but have characterized the nature of selection which must be kept in mind while interpreting the results.

4. METHODOLOGY

4.1. QUANTILE REGRESSIONS

This section gives a brief outline of the QR method which estimates the conditional quantile function just as the OLS estimates the conditional mean function of the dependent variable. The conditional quantile regression model (Koenker and Bassett, 1978) may be written as follows:

Let $Q_\theta(x)$ for $\theta \in [0, 1]$ denote the θ^{th} conditional quantile of the distribution of anthropometric outcome, (y) , given a vector of covariates, x .

The conditional quantiles are expressed as:

$$Q_\theta(x) = x' \beta_\theta \quad (1)$$

where β_θ is a vector of QR coefficients. For any $\theta \in (0, 1)$ QR coefficients, β_θ are estimated by minimizing the following objective function with respect to β :

$$n^{-1} \sum_{i=1}^n \rho_\theta(y_i - x_i' \beta_\theta) \quad (2)$$

with

$$\rho_\theta(\mu) = \{\theta * \mu, \text{ for } \mu \geq 0; (\theta - 1) * \mu, \text{ for } \mu < 0 \quad (3)$$

where $\rho_\theta(\mu)$ is also known as the check function. Just like in OLS we minimize the sum of squared residuals, in QR we minimize the sum of asymmetrically or symmetrically (the case of median) weighted absolute residuals where the weights are given by the check function.

4.2. THE OAXACA-BLINDER DECOMPOSITION

We use two methods to partition the observed change in the anthropometric outcome (y) between the two rounds, NFHS-1 and NFHS-3 into covariate and coefficient effects. The first of the decompositions employed is the OB decomposition of the change in mean HAZ and WAZ across the two rounds. This method in the current context is explained below.

Let R denote the NFHS round, which is either R1 (NFHS-1) or R3 (NFHS-3). The dependent variable y , is regressed on a vector of covariates given by x . The underlying regression models in the two rounds can be written as follows:

$$y_i^{R3} = x_i'^{R3} \beta^{R3} + \varepsilon_i^{R3} \quad (4)$$

$$y_i^{R1} = x_i'^{R1} \beta^{R1} + \varepsilon_i^{R1} \quad (5)$$

The OLS regression for each round above yields a vector of coefficients for each round as $\hat{\beta}^{R3}$ and $\hat{\beta}^{R1}$. The change over time in the mean anthropometric outcome between the two rounds can be written as:

$$\bar{y}^{R3} - \bar{y}^{R1} = \bar{x}^{R3} \hat{\beta}^{R3} - \bar{x}^{R1} \hat{\beta}^{R1} \quad (6)$$

Adding and subtracting $\bar{x}^{R1} \hat{\beta}^{R3}$, the counterfactual anthropometric outcome, to equation (6), we get

$$\bar{y}^{R3} - \bar{y}^{R1} = (\bar{x}^{R3} - \bar{x}^{R1}) \hat{\beta}^{R3} + \bar{x}^{R1} (\hat{\beta}^{R3} - \hat{\beta}^{R1}) \quad (7)$$

where $(\bar{x}^{R3} - \bar{x}^{R1}) \hat{\beta}^{R3}$ is the covariate effect and $\bar{x}^{R1} (\hat{\beta}^{R3} - \hat{\beta}^{R1})$ is the coefficient effect.

Alternatively, adding and subtracting $\bar{x}^{R3} \hat{\beta}^{R1}$, the alternate counterfactual, the change over time can be written as:

$$\bar{y}^{R3} - \bar{y}^{R1} = (\bar{x}^{R3} - \bar{x}^{R1}) \hat{\beta}^{R1} + \bar{x}^{R3} (\hat{\beta}^{R3} - \hat{\beta}^{R1}) \quad (8)$$

where $\bar{x}^{R3} (\hat{\beta}^{R3} - \hat{\beta}^{R1})$ is the coefficient effect and $(\bar{x}^{R3} - \bar{x}^{R1}) \hat{\beta}^{R1}$ is the covariate effect.

These two decompositions should give similar measurements in practical application. We construct and report the results of both the counterfactuals in the paper.

4.3. THE MACHADO AND MATA DECOMPOSITION

The MM method is an extension of the OB decomposition of the average change. The standard approach by OB method does not account for the potentially important variations in the contribution of covariate and coefficient effects at different quantiles of the distribution. This is captured in the MM decomposition which constructs a counterfactual distribution using the quantile estimates of the returns to various covariates obtained from quantile regressions. The MM decomposition method in the current context is explained as follows (Machado and Mata (2005)):

Denote by $f(y(R))$, the observed marginal density of anthropometric outcome y in round R based on the observed sample $\{y_i(R)\}$; and by $f^*(y(R))$, an estimator of the marginal density of y in round R based on the generated sample $\{y_i^*(R)\}$. The counterfactual densities will be denoted by $f^c(y(R1); x(R3))$, for the density that would result in R1 if all associated covariates were distributed as they were in R3.

We decompose the change from $f(y(R1))$ to $f(y(R3))$ into three parts:

- $f^c(y(R1); x(R3))$ with $f^*(y(R3))$: the coefficient effect;
- $f^*(y(R1))$ with $f^c(y(R1); x(R3))$: the covariate effect; and
- the residual

While such a decomposition may be constructed for any statistic, in this paper we focus on quantiles. Let $q(\cdot)$ be one such quantile. The decomposition of a change in q is as follows:

$$\begin{aligned} q(f(y(R1)) - q(f(y(R3))) &= q(f^*(y(R1))) - q(f^c(y(R1); x(R3))) \text{ (covariate effect)} \\ &+ q(f^c(y(R1); x(R3))) - q(f^*(y(R3))) \text{ (coefficient effect)} \\ &+ \text{residual} \end{aligned} \quad (9)$$

The decomposition is implemented using the following steps:

Step 1: Generate a random sample of size n , say 100, from a uniform distribution $U [0,1]$: $\theta_1, \theta_2, \dots, \theta_n$. These numbers are the quantiles to be estimated.

Step 2: For each θ from step 1, estimate the conditional quantile, $Q_\theta(x)$, yielding n estimates of the QR coefficients for the two rounds separately, i.e., $\hat{\beta}_\theta^{R1}$ and $\hat{\beta}_\theta^{R3}$.

Step 3: Generate a random sample of n individuals (with replacement) from the covariate distribution of NFHS-1 and NFHS-3 separately, i.e., x_i^{R1} and x_i^{R3} for $i=1, \dots, n$.

Step 4: Estimates of the observed distributions are given by:

$$y_i^{*R1} = x_i^{R1'} * \hat{\beta}_\theta^{R1} \quad \text{for } i=1, \dots, n \quad (10)$$

and

$$y_i^{*R3} = x_i^{R3'} * \hat{\beta}_\theta^{R3} \quad \text{for } i=1, \dots, n \quad (11)$$

Estimate of the counterfactual anthropometric distribution is given by:

$$y_i^{cR3} = x_i^{R1'} * \hat{\beta}_{\theta}^{R3} \quad \text{for } i=1\dots n \quad (12)$$

Note that another counterfactual can be estimated as:

$$y_i^{cR1} = x_i^{R3'} * \hat{\beta}_{\theta}^{R1} \quad \text{for } i=1\dots n \quad (13)$$

The first counterfactual distribution defines the anthropometric outcome of girls with NFHS-1 covariates but the returns to covariates as they were observed in NFHS-3 and the second counterfactual distribution defines the anthropometric outcome of girls with NFHS-3 covariates but the returns to covariates as they were observed in NFHS-1.

Step 5: Using the distributions calculated in step 4, the change in the estimated unconditional quantile of the anthropometric distribution between NFHS-3 and NFHS-1 can be decomposed in two alternate ways:

$$q^*(x^{R3}, \hat{\beta}_{\theta}^{R3}, \theta) - q^*(x^{R1}, \hat{\beta}_{\theta}^{R1}, \theta) \quad (14)$$

Adding and subtracting $q^c(x^{R1}, \hat{\beta}_{\theta}^{R3}, \theta)$, the counterfactual distribution to equation (14), we get

$$\begin{aligned} &= [q^*(x^{R3}, \hat{\beta}_{\theta}^{R3}, \theta) - q^c(x^{R1}, \hat{\beta}_{\theta}^{R3}, \theta)] \text{ (covariate effect)} \\ &+ [q^c(x^{R1}, \hat{\beta}_{\theta}^{R3}, \theta) - q^*(x^{R1}, \hat{\beta}_{\theta}^{R1}, \theta)] \text{ (coefficient effect)} \\ &+ \text{residual} \end{aligned} \quad (15)$$

Alternatively, adding and subtracting $q^c(x^{R3}, \hat{\beta}_{\theta}^{R1}, \theta)$, the alternate counterfactual distribution to equation (14), the change over time can be written as

$$\begin{aligned} &= [q^*(x^{R3}, \hat{\beta}_{\theta}^{R3}, \theta) - q^c(x^{R3}, \hat{\beta}_{\theta}^{R1}, \theta)] \text{ (coefficient effect)} \\ &+ [q^c(x^{R3}, \hat{\beta}_{\theta}^{R1}, \theta) - q^*(x^{R1}, \hat{\beta}_{\theta}^{R1}, \theta)] \text{ (covariate effect)} \\ &+ \text{residual} \end{aligned} \quad (16)$$

These two decompositions should give similar measurements in practical application. Results based on both the counterfactuals are reported in this paper.

However, a significant limitation of this method is that it does not quantify which covariate (or returns to it) is most important in terms of its contribution towards the aggregate covariate (or coefficient) effect. Therefore, for the disaggregate decomposition, we present the results of the OB method which allows for detailed decomposition at the mean.

5. EMPIRICAL RESULTS

5.1. ORDINARY LEAST SQUARES AND QUANTILE REGRESSION ESTIMATES OF THE CORRELATES OF ANTHROPOMETRIC OUTCOMES

We estimate 19 equidistant quantile regressions, starting from the 5th percentile up to the 95th percentile, where we regress the HAZ and WAZ measures on child, mother and household specific covariates listed in Table 3 for each round separately. Tables 4A provides the OLS and QR results for the 10th, 30th, 50th, 70th and 90th percentiles of the HAZ measure for each of the two NFHS rounds, and Table 4B presents the same for the WAZ measure.¹⁹ The change in the OLS and QR estimates, between the two rounds, for both the outcomes is presented in Table 5. We present our results in the order of the covariates listed in Table 3, that is, we begin with child specific covariates and then move onto mother and household specific covariates. We also run regressions after controlling for location effects using state dummies. For brevity, the tables are only reported in Appendix Tables (A1A, A1B and A2).²⁰

Table 4A: Mean and quantile regression estimates of height-for-age z-scores of rural girls, by NFHS round

| | NFHS-1 | | | | | | NFHS-3 | | | | | |
|-------------------------------|--------|----|----|----|----|-----|--------|----|----|----|----|----|
| | M | P | P | P | P | P9 | M | P | P | P | P | P |
| Height-for-Age Z-score | e | 1 | 3 | 5 | 7 | 0 | e | 1 | 3 | 5 | 7 | 9 |
| | a | 0 | 0 | 0 | 0 | | a | 0 | 0 | 0 | 0 | 0 |
| | n | | | | | | n | | | | | |
| <i>Child Characteristics:</i> | | | | | | | | | | | | |
| Age | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. |
| | 1 | 1 | 1 | 1 | 1 | 13 | 1 | 0 | 1 | 1 | 1 | . |
| | 2 | 1* | 3* | 3* | 3* | *** | 1* | 7* | 1* | 3* | 4* | 1 |
| | ** | ** | ** | ** | ** | (0. | ** | ** | ** | ** | ** | 3 |
| | * | (0 | (0 | (0 | (0 | 01 | (0 | (0 | (0 | (0 | (0 | ** |
| | (| .0 | .0 | .0 | .0 |) | .0 | .0 | .0 | .0 | .0 | * |

¹⁹ The QR results for other percentiles are available with the author. OLS standard errors are adjusted for clustering at the Primary Sampling Unit (PSU) level. QR standard errors are bootstrapped using 200 replications.

²⁰ A finer way to control for location effects would be to use district fixed effects. Unfortunately, district identifiers are only available for NFHS-1 and not NFHS-3. The reason for this is that NFHS-3 was designed not only to provide estimates of important indicators on family welfare, maternal and child health, and nutrition but also on HIV prevalence for which blood samples were collected. To maintain anonymity, the district identifiers were not reported.

| | | | |
|---------------|---------------------|-------------------|----|
| | 0. 1) 1) 1) 1) | 1) 1) 1) 1) 1) (| 0 |
| | 0 | 0 | . |
| | 1 | 1 | 0 |
| |) |) | 1 |
| | | |) |
| Age squared | 0. 0. 0. 0. 0. 0. | 0. 0. 0. 0. 0. 0 | 0 |
| | 1 1 1 1 1 18 | 1 0 1 1 2 | . |
| | 7 5* 7* 7* 8* *** | 6* 9* 6* 9* 0* | 1 |
| | ** ** ** ** ** | ** ** ** ** ** | 9 |
| | (0. (0 (0 (0 (0 02 | (0 (0 (0 (0 (0 ** | ** |
| | * (.0 (.0 (.0 (.0) | .0 .0 .0 .0 .0 * | * |
| | 0. 2) 1) 1) 1) | 1) 2) 1) 1) 1) (| 0 |
| | 0 | 0 | . |
| | 1 | 1 | 0 |
| |) |) | 3 |
| | | |) |
| Birth order 1 | 0. 0. 0. 0. 0. 0. | 0. 0. 0. 0. 0. - | - |
| | 0 0 0 0 0 10 | 0 1 0 0 0 0 | 0 |
| | 7 7 1 5 5 (0. | 4 8* 9 6 0 . | . |
| | ((0 (0 (0 (0 10 | (0 * (0 (0 (0 2 | 2 |
| | 0. .0 .0 .0 .0) | .0 (0 .0 .0 .0 3 | 3 |
| | 0 7) 6) 5) 5) | 5) .0 6) 5) 6) ** | ** |
| | 5 | 8) | (|
| |) | | 0 |
| | | | . |
| | | | 1 |
| | | | 1 |
| | | |) |
| Birth order 2 | 0. - 0. 0. 0. - | 0. 0. 0. 0. 0. - | - |
| | 0 0. 0 0 0 0. | 0 1 0 0 0 0 | 0 |
| | 2 0 1 5 7 04 | 5 4* 2 4 2 . | . |
| | (1 (0 (0 (0 (0. | (0 (0 (0 (0 (0 1 | 1 |
| | 0. (0 .0 .0 .0 10 | .0 .0 .0 .0 .0 1 | 1 |
| | 0 .0 6) 5) 5)) | 5) 8) 6) 5) 6) (| (|
| | 5 7) | | 0 |
| |) | | . |
| | | | 1 |
| | | | 1 |
| | | |) |
| Vaccines | 0. 0. 0. 0. 0. - | 0. 0. 0. 0. - - | - |
| | 0 0 0 0 0 0. | 0 0 0 0 0. 0 | 0 |
| | 0 0 0 0 0 00 | 0 0 0 0 0 . | . |
| | 2 4* 4* 2* 1* 2* | 1* 4* 3* 1* 0 0 | 0 |
| | ** ** ** ** * | * ** ** * 1 0 | 0 |
| | * (0 (0 (0 (0 (0. | (0 (0 (0 (0 (0 4 | 4 |
| | (.0 .0 .0 .0 00 | .0 .0 .0 .0 .0 ** | ** |
| | 0. 0 0 0 0 1) | 0 0 0 0 0 * | * |
| | 0 1) 1) 1) 1) | 1) 1) 1) 1) 1) (| (|
| | 0 | 0 | 0 |
| | 1 | 1 | . |
| |) |) | 0 |
| | | | 0 |
| | | | 1 |
| | | |) |

Mother Characteristics:

| | | | | | | | | | | | | |
|-----------------------------------|--------|--------|--------|--------|---------|-------|--------|--------|--------|--------|--------|-------|
| Age at first birth | 0.03** | 0.01* | 0.03** | 0.04** | 0.04*** | 0.04 | 0.02** | 0.01* | 0.03** | 0.02** | 0.02** | 0.00 |
| | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) | (.01) |
| Educational: At most primary | 0.05** | 0.07** | 0.03** | 0.02** | 0.05** | 0.11 | 0.02** | 0.02** | 0.06** | 0.03** | 0.06 | 0.00 |
| | (.08) | (.07) | (.05) | (.06) | (.11) | (.06) | (.09) | (.07) | (.06) | (.07) | (.06) | (.07) |
| Educational: Above primary | 0.04** | 0.07** | 0.07** | 0.08** | 0.12** | 0.12 | 0.05** | 0.03** | 0.09** | 0.04** | 0.01** | 0.02 |
| | (.08) | (.07) | (.06) | (.07) | (.12) | (.05) | (.08) | (.06) | (.06) | (.06) | (.06) | (.06) |
| <i>Household Characteristics:</i> | | | | | | | | | | | | |
| Improved drinking water | 0.04 | 0.01 | 0.08 | 0.07 | 0.09 | 0.09 | 0.05** | 0.09* | 0.01** | 0.07** | 0.03** | 0.03 |
| | (.05) | (.06) | (.05) | (.04) | (.09) | (.09) | (.05) | (.07) | (.05) | (.05) | (.06) | (.06) |
| Improved toilet | 0.08 | 0.08 | 0.00 | 0.01* | 0.12 | 0.12 | 0.06 | 0.01 | 0.03* | 0.00* | 0.09 | 0.04 |
| | (.08) | (.07) | (.06) | (.07) | (.12) | (.06) | (.09) | (.09) | (.06) | (.06) | (.07) | (.06) |

| | | |
|--------------|-------------------|-------------------|
| Wealth Index | 0. 0. 0. 0. 0. 0. | 0. 0. 0. 0. 0. 0 |
| | 0 0 0 0 0 00 | 0 0 0 0 0 0 . |
| | 0 0 1 0 0 4 | 1 1 1 1 1 0 |
| | 7 7* 0* 8* 5* (0. | 1* 2* 1* 1* 2* 1 |
| | ** ** ** ** ** ** | ** ** ** ** ** |
| | 00 | ** ** ** ** 3 |
| | * (0 (0 (0 (0 3) | (0 (0 (0 (0 (0 ** |
| | (.0 .0 .0 .0) | .0 .0 .0 .0 .0 * |
| | 0. 0 0 0 0 0 | 0 0 0 0 0 0 (|
| | 0 2) 2) 1) 2) | 1) 2) 2) 2) 2) 0 |
| | 0 | . |
| | 2 | 0 |
| |) | 0 |
| | | 2 |
| | |) |
| SC | - - - - - | - - - - - |
| | 0. 0. 0. 0. 0. 0. | 0. 0. 0. 0. 0. 0 |
| | 0 0 0 0 0 19 | 1 2 1 1 1 . |
| | 5 2 6 9* 8 (0. | 2* 3* 3* 1* 0 1 |
| | ((0 (0 (0 (0 12 | * ** * (0 (0 0 |
| | 0 .0 .0 .0 .0) | (0 (0 (0 .0 .0 (|
| | 0 8) 7) 5) 6) | .0 .0 .0 6) 7) 0 |
| | 6 | 6) 8) 6) |
| |) | . |
| | | 1 |
| | | 2 |
| | |) |
| ST | 0. - 0. 0. 0. 0. | 0. 0. 0. 0. 0. 0 |
| | 3 0. 2 2 3 67 | 1 0 0 0 1 . |
| | 2 0 2* 4* 3* *** | 9* 2 5 8 6* 4 |
| | ** 5 ** ** ** (0. | ** (0 (0 (0 ** 9 |
| | * (0 (0 (0 (0 11 | (0 .0 .0 .0 (0 ** |
| | (.0 .0 .0 .0) | .0 8) 6) 6) .0 * |
| | 0. 8) 7) 5) 6) | 6) 6) 6) 6) (|
| | 0 | 0 |
| | 8 | . |
| |) | 1 |
| | | 2 |
| | |) |
| HH Size | - - - - - 0. | - - - - - |
| | 0. 0. 0. 0. 0. 01 | 0. 0. 0. 0. 0. 0 |
| | 0 0 0 0 0 (0. | 0* 0 0 0 0 . |
| | 1 2* 2* 2* 1 01 | (0 1 1* 2* 2* 0 |
| | ** * ** ** (0) | .0 (0 (0 * * 0 |
| | ((0 (0 (0 .0 | 1) .0 .0 (0 (0 (|
| | 0. .0 .0 .0 1) | 1) 1) 1) .0 .0 0 |
| | 0 1) 1) 0) | 1) 1) . |
| | 0 | 0 |
| |) | 1 |
| | |) |
| Constant | - - - - - 0. | - - - - - 0. 1 |
| | 1. 3. 2. 1. 0. 50 | 0. 3. 2. 1. 1 . |
| | 5 3 2 5 8 * | 9 7 3 0 0 6 |
| | 3 3* 5* 3* 3* (0. | 9* 3* 3* 7* (0 9 |
| | ** ** ** ** (0 28 | ** ** ** ** .1 ** |
| | * (0 (0 (0 (0) | (0 (0 (0 (0 7) * |
| | (.1 .1 .1 .1 | .1 .2 .1 .1 (|
| | 0. 9) 6) 3) 5) | 5) 2) 6) 5) 0 |
| | 1 | . |
| | 4 | 3 |
| |) | 2 |
| | |) |
| Observations | 9 9 9 9 9 94 | 7 7 7 7 7 7 |
| | 4 4 4 4 4 89 | 5 5 5 5 5 5 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 |
| 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 |

Source: Author’s estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: The data refer to young girls under four years of age. Base category is rural girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or others caste category household having poor drinking water and poor toilet facilities. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table 4B: Mean and quantile regression estimates of weight-for-age z-scores of rural girls, by NFHS round

| | NFHS-1 | | | | | | NFHS-3 | | | | | |
|-------------------------------|--------|---|---|---|---|----|--------|---|---|---|---|---|
| Weight-for-Age Z-score | M | P | P | P | P | P | M | P | P | P | P | P |
| | 1 | 3 | 5 | 7 | 9 | 9 | 1 | 3 | 5 | 7 | 9 | 9 |
| | a | 0 | 0 | 0 | 0 | 0 | a | 0 | 0 | 0 | 0 | 0 |
| | n | | | | | | n | | | | | |
| <i>Child Characteristics:</i> | | | | | | | | | | | | |
| Age | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 6 | 6 | 5 | 5 | 5 | 6 | 4 | 5 | 4 | 4 | 4 | 5 |
| | * | * | * | * | * | ** | * | * | * | * | * | * |
| | * | * | * | * | * | * | * | * | * | * | * | * |
| | * | * | * | * | * | (| * | * | * | * | * | * |
| | (| (| (| (| (| 0 | (| (| (| (| (| (|
| | 0 | 0 | 0 | 0 | 0 | . | 0 | 0 | 0 | 0 | 0 | 0 |
| | . | . | . | . | . | 0 | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 1 | 0 | 1 |) | 0 | 1 | 1 | 1 | 1 | 1 |
| |) |) |) |) |) |) |) |) |) |) |) |) |
| Age squared | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | . | . | . | . | . | . | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 8 | 9 | 7 | 7 | 7 | 8 | 5 | 7 | 5 | 5 | 5 | 6 |
| | * | * | * | * | * | ** | * | * | * | * | * | * |
| | * | * | * | * | * | * | * | * | * | * | * | * |
| | * | * | * | * | * | (| * | * | * | * | * | * |
| | (| (| (| (| (| 0 | (| (| (| (| (| (|
| | 0 | 0 | 0 | 0 | 0 | . | 0 | 0 | 0 | 0 | 0 | 0 |
| | . | . | . | . | . | 0 | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 2 | 1 | 1 | 1 |) | 1 | 2 | 1 | 1 | 1 | 1 |
| |) |) |) |) |) |) |) |) |) |) |) |) |
| Birth order | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - |
| | . | . | . | . | . | . | . | . | . | . | . | 0 |
| | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | . |
| | 7 | 1 | 2 | 5 | 5 | 0 | 4 | 8 | 6 | 6 | 3 | 0 |
| | * | * | * | (| (| (| * | (| (| (| (| 6 |
| | (| (| * | 0 | 0 | 0 | 0 | * | 0 | 0 | 0 | (|
| | 0 | 0 | (| . | . | . | . | (| . | . | . | 0 |
| | . | . | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | . |
| | 0 | 0 | . | 4 | 5 | 7 | 4 | . | 5 | 5 | 5 | 0 |
| | 4 | 7 | 0 |) |) |) |) | 0 |) |) |) | 6 |

| | | |
|---------------|--|---|
| |)) 5) | 8) |
| Birth order 2 | 0 0 0 0 0 - 0 0 1 0 0 0 . 2 1 4 0 2 0 (((((7 0 0 0 0 0 (0 (0 0 0 (0 0 0 0 0 0 0 . 4 7 5 4 5 0))))) 7))))) 6) | 0 0 0 0 0 - 0 0 1 0 0 0 . 1 4 4 3 5 0 (* (((4 0 (0 0 0 (0 . 0 . . . 0 0 . 0 0 0 . 4 0 5 5 5 0) 8)))) 6) |
| Vaccines | 0 0 0 0 0 - 0 0 0 0 0 0 . 0 0 0 0 0 0 1 3 2 1 1 0 * * * * (2 * * * * 0 ** (* * * . (0 * * . 0 * 0 (((0 0 . ((0 . * . 0 0 0 0 . 0 0 0 0 0 (0 0 . . . 1 0 0 . . 1 0 0 0 0 0 0) 0 1 0 0) 1 . 1 0 0 0 1) 0 0) 0) 1 1 1) 1 1 0))))) 1) | 0 0 0 0 0 - 0 0 0 0 0 0 . 0 0 0 0 0 0 1 4 2 1 0 0 * * * (3 3 (* * 0 (* 0 * * . 0 * . ((0 . * 0 0 0 0 0 (0 0 . . 1 0 0 1 0 0) 1 .) 0 0) 0 1 1 0)) 1) |

Mother Characteristics:

| | | |
|----------------------------|--|---|
| Age at first birth | 0 0 0 0 0 0 0 0 0 0 0 0 3 3 2 2 3 4 * * * * * ** * * * * * * (* * * * * * (((((0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1))))))) | 0 0 0 0 0 0 0 0 0 0 0 0 2 1 2 2 2 2 * (* * * * * * 0 * * * * * . * * * * * (0 (((((0 0 1 0 0 0 0) 0 0 0 0 0 0 1 1 1 1)))))) |
| Education: At most primary | 0 0 0 0 0 - 0 1 3 2 1 1 . 5 1 4 7 3 0 * * * * * 3 * * * * * (0 (((((0 0 0 0 0 . 0 0 9 0 0 0 0 5) 5 8 5 5)))))) | 0 - 0 0 0 0 . 0 0 . 1 0 0 0 9 0 3 9 3 3 * 2 * (((((0 ((* 0 0 0 0 0 0 . 5 5 7 5 9 0)))))) 6) |

| | | | | | | | | | | | | |
|----------------|---|---|---|---|---|----|---|---|---|---|---|---|
| Educ ation: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Abov e | 3 | 4 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| prima ry | 6 | 9 | 2 | 0 | 8 | 2 | 3 | 8 | 7 | 2 | 9 | 7 |
| | * | * | * | * | * | ** | * | * | * | * | * | * |
| | * | * | * | * | * | (| * | * | * | * | * | * |
| | * | * | * | * | * | 0 | * | * | * | * | * | * |
| | (| (| (| (| (| (| (| (| (| (| (| (|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | . | . | . | . | . | 9 | . | . | . | . | . | . |
| | 0 | 0 | 0 | 0 | 0 |) | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 | 9 | 6 | 5 | 6 |) | 4 | 8 | 5 | 5 | 5 | 6 |
| |) |) |) |) |) |) |) |) |) |) |) |) |

Household Characteristics:

| | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
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Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: The data refer to young girls under four years of age. Base category is rural girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or other category household having poor drinking water and poor toilet facilities. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table 5: Change^a in mean and quantile regression estimates of anthropometric outcomes of rural girls between 1992/93 and 2005/06

| | Change in Height-for-Age Z-scores | | | | | | Change in Weight-for-Age Z-scores | | | | | | |
|-----------------------------------|-----------------------------------|---------------------------|-----------------------|----------------------------|----------------------------|----------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|-------------------------|----------------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 | |
| <i>Child Characteristics:</i> | | | | | | | | | | | | | |
| Age | 0.01 (0.01) | 0.04* ** (0.01) | 0.02* (0.01) | 0.003 (0.01) | -0.004 (0.01) | -0.01 (0.02) | 0.02* * (0.01) | 0.01 (0.01) | 0.02* (0.01) | 0.02** (0.01) | 0.01 (0.01) | 0.01 (0.01) | |
| Age squared | -0.000 (0.02) | - 0.06* * (0.03) | -0.01 (0.02) | 0.02 (0.02) | 0.02 (0.02) | 0.01 (0.04) | - 0.03* * (0.01) | -0.02 (0.02) | -0.02 (0.02) | -0.03* (0.01) | -0.02 (0.02) | -0.03 (0.02) | |
| Birth order 1 | -0.03 (0.07) | 0.13 (0.11) | 0.07 (0.09) | 0.02 (0.07) | -0.04 (0.08) | -0.28* (0.15) | 0.03 (0.06) | 0.07 (0.12) | -0.05 (0.07) | 0.08 (0.06) | -0.03 (0.07) | -0.07 (0.10) | |
| Birth order 2 | 0.02 (0.07) | 0.18* (0.11) | 0.01 (0.08) | -0.01 (0.07) | -0.06 (0.09) | -0.03 (0.13) | -0.001 (0.05) | 0.002 (0.10) | -0.02 (0.07) | 0.04 (0.07) | 0.01 (0.07) | 0.01 (0.10) | |
| Vaccines | - 0.002* (0.001) | -0.001 (0.001) | - 0.000 (0.001) | -0.001 (0.001) | - 0.002* (0.001) | -0.002 (0.002) | 0.000 (0.001) | 0.001 (0.001) | - 0.000 (0.001) | -0.001 (0.001) | -0.000 (0.001) | -0.001 (0.001) | |
| <i>Mother Characteristics:</i> | | | | | | | | | | | | | |
| Age at first birth | -0.01 (0.01) | 0.01 (0.02) | - 0.000 (0.01) | -0.01 (0.01) | -0.02 (0.01) | -0.02 (0.02) | -0.01 (0.01) | -0.01 (0.01) | - 0.004 (0.01) | -0.001 (0.01) | -0.01 (0.01) | -0.02* (0.01) | |
| Education: At most primary | -0.03 (0.07) | -0.14 (0.13) | -0.13 (0.10) | -0.08 (0.08) | -0.09 (0.09) | 0.15 (0.17) | -0.07 (0.06) | - 0.31* ** (0.12) | -0.09 (0.08) | -0.08 (0.06) | -0.08 (0.07) | 0.05 (0.09) | |
| Education: Above primary | -0.08 (0.08) | 0.07 (0.13) | - 0.15* (0.09) | -0.13* (0.07) | - 0.27** (0.09) | -0.03 (0.16) | - 0.14* * (0.06) | -0.19* (0.12) | - 0.14* (0.08) | - 0.20** * (0.06) | - 0.17** (0.07) | -0.09 (0.10) | |
| <i>Household Characteristics:</i> | | | | | | | | | | | | | |
| Improved drinking water | - 0.28** * (0.07) | -0.13 (0.10) | - 0.13* (0.08) | - 0.21* ** (0.07) | - 0.36** * (0.07) | - 0.58* ** (0.15) | - 0.13* * (0.06) | -0.07 (0.10) | -0.02 (0.07) | -0.11* (0.06) | - (0.06) | - 0.18** (0.06) | - 0.31** * (0.09) |
| Improved toilet | 0.01 (0.07) | -0.05 (0.14) | 0.03 (0.10) | 0.001 (0.08) | -0.03 (0.09) | 0.05 (0.17) | - 0.13* * (0.06) | -0.14 (0.13) | - 0.17* * (0.08) | - 0.17** (0.07) | - 0.19** * (0.06) | -0.06 (0.10) | |
| Wealth index | 0.004* ** (0.002) | 0.003 (0.003) | 0.002 (0.002) | 0.003 * (0.002) | 0.007* ** (0.002) | 0.009 ** (0.004) | 0.01* ** (0.001) | 0.002 (0.003) | 0.003 * (0.001) | 0.004* ** (0.002) | 0.007* ** (0.001) | 0.009* ** (0.003) | |

| | | | | | | | | | | | | |
|----------------|------------------|------------------|-----------------|------------------|------------------|-----------------|------------------|-----------------|----------------|-----------------|-----------------|------------------|
| SC | -0.07 (0.08) | -0.19* (0.11) | -0.05 (0.10) | -0.01 (0.08) | -0.04 (0.09) | 0.08 (0.18) | -0.06 (0.06) | -0.17 (0.13) | - (0.07) | -0.03 (0.07) | -0.04 (0.07) | 0.04 (0.10) |
| ST | -0.12 (0.08) | 0.09 (0.13) | - (0.09) | -0.14* (0.08) | -0.14 (0.09) | -0.16 (0.21) | - (0.06) | - (0.13) | - (0.09) | - (0.07) | - (0.07) | - (0.13) |
| Household size | 0.001 (0.01) | 0.01 (0.01) | 0.001 (0.01) | 0.001 (0.01) | -0.01 (0.01) | -0.02 (0.02) | -0.002 (0.01) | 0.02* (0.01) | - (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.003 (0.01) |
| Constant | 0.54** (0.22) | -0.47 (0.34) | -0.03 (0.25) | 0.48* (0.23) | 0.93** (0.23) | 1.24* (0.42) | 0.13 (0.15) | 0.11 (0.32) | 0.09 (0.17) | 0.06 (0.19) | 0.25 (0.19) | 0.44 (0.28) |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change in returns is calculated as $(\beta^{\wedge R3} - \beta^{\wedge R1})$.

The data refer to young girls under four years of age. Base category is rural girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or others caste category household having poor drinking water and poor toilet facilities. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

As seen from the tables, both the anthropometric outcomes have a convex relationship with the age of the child: decreasing initially with age and then increasing throughout the distribution. This is seen for both the rounds.

The coefficient of having a lower birth order, say for instance, being first born relative to a birth order of 3 or more, show no association across the HAZ distribution for the two rounds except for the 10th and 90th percentile in 2005/06. Being of a lower birth has a significant positive effect on the height of a severely stunted child but has a negative effect on an extremely tall child. For WAZ, on the other hand, the coefficient show positive effect at the mean and till the 30th percentile. This, however, remain significant till the 10th percentile only as we move to the 2005/06 distribution. Looking at the change in Table 5, the coefficient at the 90th percentile for HAZ, representing relatively tall girls, suggests significant deterioration in the returns to having a lower birth order.

Increase in the percentage of vaccines received has a positive effect on HAZ and WAZ in at least the lower-than median percentiles and at the mean, but the magnitude of the coefficients is very small to have any meaningful interpretation (Table 5).

Maternal characteristics like mother being older at the time of birth of her first child and better education, for instance, having more than primary (above primary education covariate)

education relative to no education, positively predicts the anthropometric outcomes across much of the distribution for NFHS-1 and NFHS-3 except at some extreme percentiles where the coefficients are insignificant (for example, the coefficient of the former covariate is insignificant at the 10th percentile of the WAZ distribution in NFHS-3. For HAZ, it is insignificant at the 10th percentile in both NFHS-1 and NFHS-3). However, the returns to the mother's education significantly declined for the WAZ indicator at the mean and across percentiles except at the 90th percentile. For the HAZ indicator also the decline in returns is observed between the 30th and 70th percentiles and this is not picked up by the mean change (see Table 5).

Unexpectedly, the impact of household's access to improved source of drinking water on the anthropometric outcomes is negative across the 2005/06 distribution. Referring to Table 5, we find that the returns to household's access to improved drinking water has further worsened at the mean and for the relatively nourished girls (the negative change is significant at the median and higher percentiles for both HAZ and WAZ). In addition to this, the worsening in HAZ is also seen for the moderately stunted girl (30th percentile of HAZ in Table 5)

Household characteristics like access to improved toilets (relative to poor or no toilets) and higher economic status are positively associated with the anthropometric outcomes, but the coefficients are insignificant at few percentiles. Looking whether the change is significant in Table 5, we find that the return to improved toilets declined over time across the WAZ distribution, except for the extreme bottom and top 10 percent of the distribution. The returns to household wealth show a statistical increase over time for the two outcomes at the mean and for most of the higher percentiles, however, the magnitude of change is very small to have any meaningful economic interpretation.

The coefficient of scheduled caste (SC) dummy (relative to other backward caste (OBC) and 'others' caste category) shows a negative association with the anthropometric outcomes (when significant), which is not unexpected given that SC's are considered to be a disadvantaged group of the Indian society. The negative association is seen to be stronger in NFHS-3, but the change between the two rounds is not significant except for the negative change witness by extremely stunted girls born in SC households (see the coefficient at the 10th percentile in the HAZ panel in Table 5) and moderately underweight girls born in SC households (see the coefficient at the 30th percentile in the WAZ panel in Table 5).

Interestingly, the household head belonging to scheduled tribe (ST) (relative to OBC and 'others' caste group) shows a positive association at the mean for both the outcomes across the two rounds indicating that *ceteris paribus*, girls born to this marginalized group, relative to those belonging to OBC and 'others' caste group, on average are associated with a higher HAZ and WAZ. Looking at the coefficients across percentiles, we find that in 2005/06, the coefficient for WAZ is negative at the 10th percentile and is insignificant for HAZ for the bottom half of the distribution. Between the two rounds, we observe a sharp decline in the returns to ST dummy at the mean and across the WAZ distribution as seen in Table 5. The returns have also declined between the 30th and 50th percentile of the HAZ distribution. At this point it is advantageous to discuss the parameters estimates of ST dummy when state fixed effects are included in Appendix Tables (A1A, A1B and A2).²¹ We find that on the inclusion of the state dummies, the coefficient on ST dummy is insignificant for the two outcome indicators except for the positive coefficient at the mean and through the 30th and 50th percentiles of HAZ in NFHS-1 (Table A1A and A1B). We find no significant change in the coefficient value between the two rounds for either of the two anthropometric indicators (A2).

Looking at the coefficient on the individual state dummies, we find that at least for WAZ, the change in coefficient value is always negative relative to Jammu and Kashmir (the omitted category), whenever significant. The only exception is Arunachal Pradesh where we see a positive change in the coefficient at the mean and 50th percentile. This trend is seen for tribal as well as non-tribal states (Table A2).²² For the HAZ distribution, we see a mixed pattern in the change in coefficient; for some states it is positive, for some it is negative.

An increase in the number of members living in the household has a worsening effect on the height and weight outcomes. This is seen at the mean and at least for the bottom; half of the distribution for the two outcomes. The coefficients are similar in the two rounds and show no significant change (Table 5). This is not surprising since for a larger household, the resources are allocated among a larger number of people. The decrease in per capita money spent matters more for individuals who are relatively undernourished.

²¹ The results of other covariates remain consistent when we control for state differences (Appendix Tables (A1A, A1B and A2)).

²² The following constitute the tribal population dominated states for our sample: "The Seven Sister States" in the North East of India (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura), Orissa and Bihar (includes Jharkhand).

The coefficients associated with the intercept term, which picks up the effect of all other covariates not included in the model, suggest a positive change, but this too is seen at the mean for the higher percentiles of the HAZ indicator. For the WAZ indicator, on the other hand, the change in the intercept is not statistically significant.

While the OLS and QR exercise was carried out to identify the covariates associated with higher improvements seen in the lower percentiles of the HAZ and WAZ distributions, the results suggest the opposite instead. We observe a significant decline in the return to many of the key covariates—mainly for the WAZ distribution. These include the following: more than primary education of the mother (relative to no education), having access to improved toilets (relative to poor quality) and belonging to ST (relative to OBC and ‘others’ caste category). In the next section, we present the results on the decomposition exercise to understand what drives the improvements witnessed in the anthropometric outcomes.

5.2 THE AGGREGATE OAXACA-BLINDER DECOMPOSITION RESULTS

Table 6 presents the aggregate OB decomposition exercise for HAZ and WAZ based on the counterfactual constructed using the 2005/06 coefficients (NFHS-3) and the covariates as they were in 1992/93 (NFHS-1).²³

Starting with HAZ, in the aggregate, the coefficient effect seems to have a greater role in explaining the mean change in the HAZ between the two rounds relative to the covariate effect. Looking at the respective contribution of the two effects to the total change, we see that the improvement in the endowment of several covariates that are positively associated with HAZ taken together account for only 20 percent of the total change, holding the return to these covariates constant at 2005/06 levels across both years, and the remaining 80 percent is explained by the change in the returns to the covariates.

Table 6: The aggregate Oaxaca-Blinder decomposition using 2005/06 coefficients to create the counterfactual

| | Change in Height-for-Age Z-score | | Change in Weight-for-Age Z-score | |
|--------------------|----------------------------------|-------------------|----------------------------------|-------------------|
| | Estimate | % of Total Change | Estimate | % of Total Change |
| Covariate Effect | 0.07*** (0.02) | 20 | 0.10*** (0.02) | 71 |
| Coefficient Effect | 0.29*** (0.04) | 80 | 0.04 (0.03) | 29 |

²³ Standard errors are adjusted for clustering at the PSU level.

| | | |
|---------------------------|-------------------|-------------------|
| Total Change ^a | 0.36*** (0.04) | 0.14*** (0.03) |
| Observations | 17087 | 17581 |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93].

The data refer to young girls under four years of age. Robust standard errors clustered at the PSU level are reported in parentheses; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

The finding of a dominant coefficient effect is, however, not seen in the decomposition of WAZ measure. In fact, the covariate effect is responsible for the entire change in mean WAZ— explaining 71 percent of the total change; the coefficient effect is insignificant. In other words, the change in mean WAZ is entirely due to improvement in the endowment of covariates associated with improving WAZ.²⁴

5.3. THE MACHADO AND MATA DECOMPOSITION RESULTS

Tables 7 summarizes the results of the MM decomposition of the change in HAZ and WAZ for the nine deciles using the 2005/06 coefficients to construct the counterfactual distribution; a graphical representation of which is in Figure 3.²⁵

Table 7: The Machado-Mata decomposition using 2005/06 coefficients to create the counterfactual distribution

| Perce ntile | Change in Height-for-Age Z-scores | | | | | Change in Weight-for-Age Z-scores | | | | |
|----------------|-----------------------------------|---------------------|-----------------------------|-----------------------|-------------------------|-----------------------------------|---------------------|-----------------------------|--------------------|-------------------------|
| | Total Chang e ^a | Covariate Effect | | Coefficient Effect | | Total Chang e ^a | Covariate Effect | | Coefficient Effect | |
| | | Estim ate | % of Total Chang e | Esti mate | % of Total Change | | Estim ate | % of Total Chang e | Estima te | % of Total Change |
| 10 | 0.56** * | 0.12* * | 22 | 0.44* ** | 78 | 0.27** * | 0.13** * | 49 | 0.14** * | 51 |
| | (0.06) | (0.05) | | (0.08) | | (0.07) | (0.07) | | (0.06) | |

²⁴ The broad conclusion on the components of aggregate change in mean HAZ and WAZ is unchanged if the 1992/93 coefficients are used to create the counterfactual instead. Therefore, the results for the same is provided in the Appendix Table A2.3.

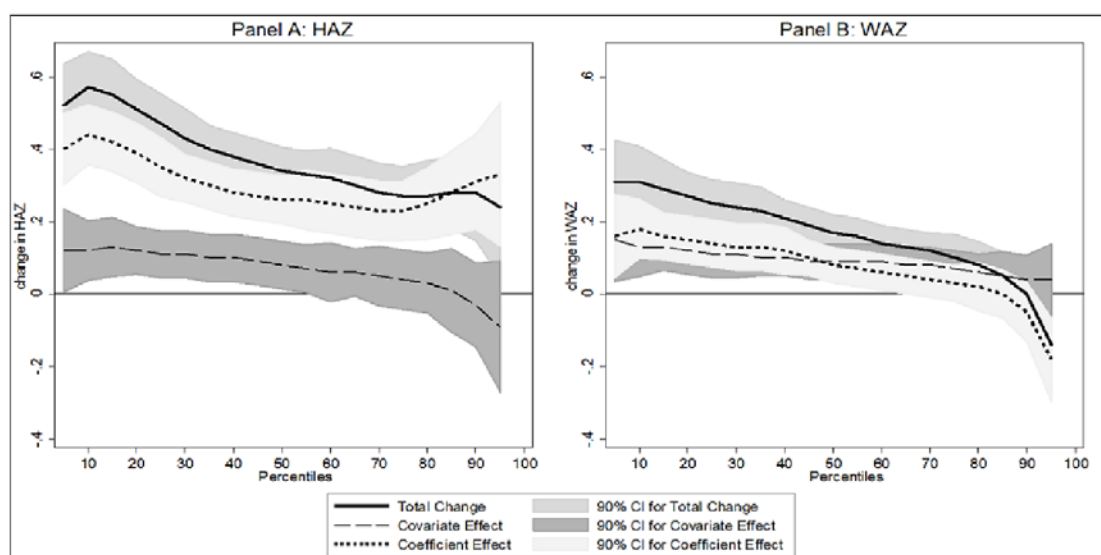
²⁵ Standard errors are bootstrapped using 200 replications.

| | | | | | | | | | | |
|----|-------------|-------------|----|-------------|-----|-------------|-------------|-----|-------------|------|
| 20 | 0.51** * | 0.13* ** | 25 | 0.38* ** | 75 | 0.26** * | 0.14** * | 53 | 0.12** * | 47 |
| | (0.05) | (0.04) | | (0.08) | | (0.05) | (0.06) | | (0.06) | |
| 30 | 0.43** * | 0.11* ** | 26 | 0.32* ** | 74 | 0.25** * | 0.13** * | 52 | 0.12** * | 48 |
| | (0.04) | (0.04) | | (0.06) | | (0.04) | (0.04) | | (0.05) | |
| 40 | 0.37** * | 0.10* * | 27 | 0.27* ** | 73 | 0.22** * | 0.12** * | 54 | 0.10** * | 46 |
| | (0.04) | (0.04) | | (0.05) | | (0.03) | (0.04) | | (0.03) | |
| 50 | 0.34** * | 0.10* * | 30 | 0.24* ** | 70 | 0.19** * | 0.11** * | 60 | 0.08** * | 40 |
| | (0.04) | (0.04) | | (0.04) | | (0.03) | (0.03) | | (0.03) | |
| 60 | 0.31** * | 0.08 | 25 | 0.23* ** | 75 | 0.16** * | 0.10** * | 62 | 0.06** | 38 |
| | (0.04) | (0.04) | | (0.05) | | (0.03) | (0.03) | | (0.02) | |
| 70 | 0.28** * | 0.07 | 25 | 0.21* ** | 75 | 0.13** * | 0.09** * | 71 | 0.04 | 29 |
| | (0.04) | (0.04) | | (0.04) | | (0.03) | (0.03) | | (0.04) | |
| 80 | 0.27** * | 0.04 | 13 | 0.23* ** | 27 | 0.10** | 0.09** | 87 | 0.01 | 13 |
| | (0.04) | (0.05) | | (0.05) | | (0.03) | (0.03) | | (0.04) | |
| 90 | 0.28** * | -0.03 | -9 | 0.31* ** | 109 | 0.02 | 0.07 | 302 | -0.05 | -202 |
| | (0.06) | (0.08) | | (0.08) | | (0.04) | (0.04) | | (0.04) | |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93]

The data refer to young girls under four years of age. Standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.



Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: The data refer to young girls under four years of age. The 90 percent confidence bands are obtained using the bootstrap technique (200 replications).

Figure 3: The Machado-Mata decomposition using 2005/06 coefficients to create the counterfactual distribution

Looking at the column for total change in the HAZ measure, we see that the improvement between the two rounds is highest at the 10th percentile and falls thereafter: from 0.56 SD at the 10th percentile to 0.34 SD at the median and 0.28 SD at the 90th percentile. The proportion of the change due to coefficient effect is high and relatively stable, between 70 and 78 percent across much of the distribution (up to the 70th percentile). Correspondingly, the covariate effect explains approximately 30 percent of the change for the bottom half of the HAZ distribution and becomes insignificant beyond the median. Note that both the total change and the coefficient effect get smaller as we move to higher percentiles, but are significant throughout the HAZ distribution. By and large, however, these results are in consonance with the OB decomposition which indicates that changes in the returns to covariates explain much of the

improvement in HAZ; and improvements in covariates—to the extent they matter—only do so for stunted girls.

Similar to the HAZ outcome, the change in WAZ decreases from 0.27 SD at the 10th percentile to 0.19 SD at the median and then becomes insignificant at the 90th percentile. Unlike the case with the OB decomposition where the improvement in WAZ was almost entirely explained by the covariate effect, results from the MM decomposition indicates that at least for the bottom half of the distribution, the coefficient effect contributes as much as the covariate effect in explaining the overall change (the dashed curve for covariate effect lies within the confidence band for the coefficient effect in Panel B of Figure 3). It is clearly seen from the table that the coefficient effect is significantly different from zero till the 60th percentile, beyond which it turns insignificant. Note that the total change in WAZ is also insignificant beyond the 80th percentile—this is not surprising as these are already well-nourished children. This indicates that the coefficient effect at the mean is not representative of the effect of change in returns for the relatively underweight girls (for the lower percentiles).²⁶

Thus far, the discussion has focused on the aggregate decomposition of the change in anthropometric outcomes into coefficient and covariate effects. To assess which specific covariates and associated coefficients account for these patterns, we turn to a more disaggregated decomposition in the next section. However, the focus is only the average change, as the covariate-specific analysis at different quantiles (using recentered influence function (RIF) technique developed by Firpo *et al.*, (2009)) is beyond the scope of this study.²⁷

5.4. THE DISAGGREGATE OAXACA-BLINDER DECOMPOSITION RESULTS

Table 8 presents findings from the detailed decomposition exercise for HAZ and WAZ using the OB method. We use the same counterfactual as used in the discussion of results of aggregate OB, that is, 2005/06 coefficients combined with 1992/93 covariates.²⁸

Table 8: The disaggregate Oaxaca-Blinder decomposition using 2005/06 coefficients to create the counterfactual

| Change in Height-for-Age Z-scores | Change in Weight-for-Age Z-scores |
|-----------------------------------|-----------------------------------|
|-----------------------------------|-----------------------------------|

²⁶ As noted in the Section 4.3, another set of estimates could be obtained using 1992/93 counterfactual. The results are similar and therefore, are presented in Appendix Table A4 and Appendix Figure A1.

²⁷ RIF technique allows for detailed decomposition just like OB. Also, RIF technique generates estimates of unconditional quantile estimates, whereas QR provides conditional quantile estimate. Thus, one can also estimate the marginal effect of the covariates on the unconditional quantile estimates.

²⁸ The results of the alternative counterfactual are analogous and are presented in the Appendix Table A5.

| | Covariate Effect | | Coefficient Effect | | Covariate Effect | | Coefficient Effect | |
|-------------------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| | Estimate | % of Total Change | Estimate | % of Total Change | Estimate | % of Total Change | Estimate | % of Total Change |
| <i>Child Characteristics:</i> | | | | | | | | |
| Age | -0.04*** (0.01) | -10 | 0.18** (0.09) | 49 | -0.01*** (0.00) | -9 | 0.16** (0.07) | 116 |
| Birth order | 0.00 (0.00) | 1 | -0.00 (0.03) | -1 | 0.00 (0.00) | 1 | -0.01 (0.02) | -6 |
| Vaccines | 0.01 (0.01) | 2 | -0.06* (0.04) | -18 | 0.02* (0.01) | 12 | ;-0.00 (0.03) | -1 |
| <i>Mother's Characteristics:</i> | | | | | | | | |
| Age at first birth | 0.01*** (0.00) | 4 | -0.24 (0.16) | -65 | 0.01*** (0.00) | 8 | -0.18 (0.13) | -130 |
| Education | 0.04*** (0.01) | 11 | -0.02 (0.02) | -6 | 0.04*** (0.01) | 28 | -0.04* (0.02) | -26 |
| <i>Household's Characteristics:</i> | | | | | | | | |
| Improved drinking water | -0.01*** (0.00) | -3 | -0.19*** (0.05) | -53 | -0.01*** (0.00) | -6 | -0.09** (0.04) | -63 |
| Improved toilet | 0.01 (0.01) | 3 | 0.00 (0.02) | 1 | 0.01* (0.01) | 7 | -0.03* (0.01) | -19 |
| Wealth Index | 0.03*** (0.01) | 7 | 0.11** (0.06) | 30 | 0.03*** (0.01) | 21 | 0.15*** (0.05) | 113 |
| SC/ST | 0.01 (0.01) | 2 | -0.03 (0.02) | -8 | 0.00 (0.00) | 1 | -0.05*** (0.02) | -34 |
| HH Size | 0.01 (0.01) | 3 | 0.01 (0.07) | 2 | 0.01 (0.01) | 8 | -0.03 (0.05) | -20 |
| Constant | | | 0.54*** (0.20) | 149 | | | 0.13 (0.17) | 99 |
| Total Change ^a | 0.07*** (0.02) | 20 | 0.29*** (0.04) | 80 | 0.10*** (0.02) | 71 | 0.04 (0.03) | 29 |
| Observations | 17087 | | | | 17581 | | | |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93]

The data refer to young girls under four years of age. Robust standard errors clustered at the PSU level are reported in parentheses; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Considering HAZ first, aggregate covariate effect stands at 20 percent, bulk of which is coming from improvements in mother's education and household wealth. A perverse sign is seen on the variables representing child's age and access to improved sources of drinking

water. Likewise, the aggregate coefficient effect, although large, consists of a mix of offsetting positive and negative coefficient effects for individual covariates with the intercept capturing the bulk of the effect. It is hard to interpret what the change in intercept implies as it is a residual category, and might be picking up a change in the returns to factors which have not been identified in the model.

Turning to the disaggregated decomposition of the change in mean WAZ, the contribution of the aggregate covariate effect is 71 percent which is largely coming from the favourable change in the endowment of the following covariates: improvement in the vaccine environment, increase in the age of the mother at the time of first birth, increase in mother's education, improved toilets and household wealth.

The aggregate coefficient effect is insignificant, but this does not imply that contributions of individual covariates to total change are insubstantial. In fact, we observe negative contributors cancelling out the effect of positive contributors and making the overall effect insignificant: the negative contributions of mother's education and household level sanitation and caste variables nullifies the positive and strong effect of change in returns to child's age and household wealth.

The decomposition exercise, thus, provides an understanding as to what is driving the improvement in the height and weight outcomes among rural girls in India- whether it is endowment differences between the two rounds of the variables commonly used in explaining nutritional outcomes (covariate effect), or it is the differential strength of relationships across the two rounds between child health and the nutrition-related endowments (coefficient effect)? From the Oaxaca Blinder method we find improvement in the vaccine environment, increase in the age of the mother at the time of first birth, increase in mother's education, improved toilets and household wealth are responsible for a fairly large part of the substantial improvements in WAZ (covariate differences). For HAZ, on the other hand, the predominant effect of a larger intercept (largest contributor to HAZ coefficient effect) is due to changes in some variables that are not in the data. These include important parental indicators such as parents' heights and other health indicators, which are partly transmitted to children genetically.

6. SUMMARY AND CONCLUSIONS

Using data from the first and third round of NFHS, this paper made an attempt to analyse the drivers of change in nutritional outcomes of young girls in rural India. Previous work on child health has mainly focused on the change in average nutritional outcomes, but does not distinguish between undernourished and well-nourished children. We examine change across different quantiles of the nutrition status distribution. We use two anthropometric indicators, expressed in z-scores, to assess nutritional status: stunting as captured by height-for-age (HAZ) and underweight, as measured by weight-for-age (WAZ). Although our results show modest improvement in the anthropometric performance, girl-child undernutrition remains widespread in rural India. Broadly, we find that improvements show an uneven trend: declining with significantly greater improvement at the lower percentiles i.e. for stunted and underweight girls. We explore the reasons behind this trend in relation to various child, mother and household level correlates of the anthropometric outcomes using OLS and QR methods. The OLS and QR results suggest that there is a conspicuous decline in the returns to many of the factors influencing child undernutrition, and markedly more for the WAZ distribution. These include, more than primary education of the mother (relative to no education), having access to improved toilets (relative to poor or no toilets), and belonging to ST (relative to OBC and others caste) category. There is no factor to which the returns increased meaningfully between the two rounds.

In order to understand what is driving the change in the anthropometric outcomes, we perform the decomposition analysis. We decompose the change into its constituent components at the mean, using the OB method, and across the distribution using QR based MM method. We find for the HAZ measure, the results of OB and MM are in consonance with each other with coefficient effect contributing relatively more to the overall change than the covariate effect. The disaggregate OB of HAZ, however, reveals that bulk of the coefficient effect is coming from the intercept. The positive intercept term (picks up the effect of all other covariates not included in the model), while more difficult to interpret, suggests that the improvement in HAZ is likely to pick up the effect of policies and interventions related to food, nutrition and sanitation that were put in place years ago. Another important excluded covariate is mother's health which is related to child's height through the genetics pathway. We can argue that our sample of interviewed mothers in NFHS-3 are relatively healthier compared to those interviewed in NFHS-1. The NFHS-3 parents were by and large a part of post Green Revolution period and were less likely to be food insecure, whereas NFHS-1 parents were young children

before the Green Revolution, and may have been both nutritionally deprived, and also, may have faced severe droughts. It is possible that this affected their heights more permanently than weights, and part of this is showing up in the positive intercept contribution in HAZ decomposition, but not in WAZ decomposition. Thus, the cohort of children born to NFHS-3 mothers are relatively taller which gets reflected in the positive and dominant contribution of the intercept to the coefficient effect.

Turning to the decomposition of the WAZ indicator, we find that it is the improvement in the covariates, mostly related to improved endowment of mother's education, number of vaccines received, improved toilets and household wealth that explains the improvement in the mean WAZ. The results are, however, enriched by MM decomposition which suggests that the coefficient effect is equally important for the bottom half of the distribution, that is, for the relatively undernourished.

An important finding of this analysis is that improvements have been higher for the most vulnerable girls and for them both the covariate and coefficient effects are important. We are also able to highlight the factors associated with poor nutrition as well as improved outcomes which can be targeted through specific interventions and policy initiatives: health and hygiene infrastructure; mother's education; and household's economic status. Therefore, efforts should be directed in designing and implementing policies targeting these factors such that both the covariate and coefficient effects work complementarily to each other in lowering and ultimately eradicating the problem of girl-child undernutrition in India.

REFERENCES

- Arnold, F., Parasuraman, S., Arokiasamy, P., and M. Kothari. 2009. Nutrition in India. National Family Health Survey (NFHS-3), India, 2005-06. Mumbai: International Institute for Population Sciences; Calverton, Maryland, USA: ICF Macro.
- Bhalotra, S., Valente, C., and A. Van Soest. 2010. "The puzzle of Muslim advantage in child survival in India." *Journal of Health Economics* 29: 191-204.
- Blinder, A. 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resources* 8: 436-455.
- Borooh, V. A. 2005. "The height-for-age of Indian children." *Economics and Human Biology* 3: 45-65.
- Cavatorta, E., Shankar, B., and A. Flores-Martinez. 2015. "Explaining cross-state disparities in child nutrition in rural India." *World Development* 76: 216-237.
- Census of India. 2013. Census of India 2011: Primary Census Abstract. Data Highlights. India, Series 1, Government of India. Accessed February 15, 2017. http://www.censusindia.gov.in/2011census/PCA/PCA_Highlights/pca_highlights_file/India/Chapter-1.pdf
- Das Gupta, M. 1987. "Selective discrimination against female children in rural Punjab, India." *Population and Development Review* 13: 377-400.
- Fairlie, R. W. 2006. "An extension of the Blinder-Oaxaca decomposition technique to logit and probit models." IZA Discussion Paper No.1917.
- Firpo, S., Fortin, N. M., and T. Lemieux. 2009. "Unconditional Quantile regressions." *Econometrica* 77(3): 953-973.
- Gragnotati, M., Shekar, M., Das Gupta, M., Bredenkamp, C., and Y. K. Lee. 2005. "India's undernourished children: A call for reform and action, Health, Nutrition and Population (HNP)." Discussion Paper, Washington, DC: The World Bank.
- Griffiths, P., Matthews, Z. and A. Hinde. 2002. "Gender, family and the nutritional status of children in three culturally contrasting states of India." *Social Science & Nutrition* 55: 775-790.
- Haddad, L., Achadi, E., Bendech, M. A., Ahuja, A., Bhatia, K., Bhutta, Z., Blössner, M., Borghi, E., Colecraft, E., de Onis, M., Eriksen, K., Fanzo, J., Flores-Ayala, R., Fracassi, P., Kimani-Murage, E., Nago Koukoubou, E., Krasevec, J., Newby, H., Nugent, R., Oenema, S., Martin-Prével, Y., Randel, J., Requejo, J., Shyam, T., Udomkesmalee, E., and K. S. Reddy. 2015. "The Global Nutrition Report 2014: Actions and accountability to accelerate the world's progress on nutrition." *The Journal of Nutrition* 145: 663-671.

- Indian Academy of Pediatrics Committee on Immunization (IAPCOI). 2008. "Consensus recommendations on immunizations." *Indian Pediatrics* 45: 635-648.
- Kandpal, E. 2011. "Beyond Average Treatment Effects: Distribution of child nutrition outcomes and program placement in India's ICDS." *World Development* 39(8):1410-1421.
- Koenker, R., and G. Bassett. 1978. "Regression Quantiles." *Econometrica* 46: 33-50.
- Kumar, A., and A. Singh. 2013. "Decomposing the gap in childhood undernutrition between poor and non-poor in urban India, 2005-06." *PLoS ONE* 8(5): (e64972).
- Kumar, A., and D. Kumari. 2014. "Decomposing the rural-urban differentials in childhood malnutrition in India, 1992-2006." *Asian Population Studies* 10: 144-162.
- Machado, J. F., and J. Mata. 2005. "Counterfactual Decomposition of Changes in Wage Distributions Using Quantile Regression." *Journal of Applied Econometrics* 20: 445-465.
- Mishra, V., Roy, T. K., and R.D. Retherford. 2004. "Sex Differentials in childhood Feeding, Health Care, and Nutritional Status in India." *Population and Development Review* 30(2): 269-295.
- Oaxaca, R. 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review* 14 (3): 693-709.
- Oster, E. 2009. "Proximate Sources of Population Sex Imbalance in India." *Demography* 46 (2): 325-339.
- Paul, V. K., Sachdev, H. S., Mavalankar, D., Ramachandran, P., Sankar, M. J., Bhandari, N., Sreenivas, V., Sundararaman, T., Govil, D., Osrin, D., and B. Kirkwood. 2011. "Reproductive health, and child health and nutrition in India: Meeting the challenge." *The Lancet* 377: 332-349.
- RSOC (2015). Rapid Survey on Children 2013/4. India Factsheet. Provisional. Ministry of Women and Child Development. Government of India. Accessed February 15, 2017. http://wcd.nic.in/issnip/National_Fact%20sheet_RSOC%20_02-07-2015.pdf
- Smits, J., and R. Steendijk. 2013. "The International Wealth Index." Nice Working Paper 12-107.
- Spears, D. 2013. "How much international variation in child height can sanitation explain?" World Bank Policy Research Working Paper, Washington, DC: The World Bank.
- Tarozzi, A., and A. Mahajan. 2007. "Child Nutrition in India in the Nineties." *Economic Development and Cultural Change* 55(3): 441 - 486.

- Tarozzi, A. 2011. "Some Facts about Boy vs. Girl Health Indicators in India: 1992 to 2005." Working Paper presented at CESifo Venice Summer Institute Workshop on malnutrition in South Asia, Venice International University, July 20-21, 2011.
- UN Report. 2015. *The World's Women 2015: Trends and Statistics*. New York: United Nations Statistics Division. Accessed February 15, 2017. https://unstats.un.org/unsd/gender/downloads/WorldsWomen2015_chapter2_t.pdf
- UNICEF. 1998. *The State of the World's Children*. New York: United Nations Children's Fund. Accessed February 15, 2017. <https://www.unicef.org/sowc98/UNICEF> 2013. *Improving child nutrition: The achievable imperative for global progress*, New York: United Nations Children's Fund. Accessed February 15, 2017. https://www.unicef.org/publications/index_68661.html
- Waterlow, J. C., Buzina, R., Keller, W., Lane, J. M., Nichaman, M. Z., and J. M. Tanner. 1977. The presentation and use of height and weight data for comparing the nutritional status of groups of children under the age of 10 years. *Bulletin of the World Health Organization* 55: 489-498.
- WHO Multicentre Growth Reference Study Group. 2006. *WHO Child Growth Standards: Length/Height for Age, Weight for Age, Weight for Length, Weight for Height and body mass index-for-age: Methods and development*, World Health Organization, Geneva. Accessed February 15, 2017. http://www.who.int/childgroeth/standards/technical_report/en/

Appendix Tables

Table A1A: Mean and quantile regression estimates of HAZ of rural girls under four years, by NFHS round (state fixed effects)

| Height-for-Age Z-score | NFHS-1: 1992-3 | | | | | | NFHS-3: 2005-6 | | | | | |
|------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| Child Characteristics: | | | | | | | | | | | | |
| Age | 0.12*** (0.01) | 0.11*** (0.01) | 0.12*** (0.01) | 0.13*** (0.01) | 0.13*** (0.01) | 0.14*** (0.01) | 0.11*** (0.01) | 0.07*** (0.01) | 0.11*** (0.01) | 0.13*** (0.01) | 0.14*** (0.01) | 0.14*** (0.01) |
| Age squared | 0.17*** (0.01) | 0.14*** (0.02) | 0.16*** (0.01) | 0.18*** (0.01) | 0.18*** (0.01) | 0.19*** (0.02) | 0.17*** (0.01) | 0.09*** (0.02) | 0.16*** (0.01) | 0.19*** (0.01) | 0.21*** (0.01) | 0.20*** (0.03) |
| Birth order 1 | 0.06 (0.05) | 0.11 (0.07) | 0.05 (0.05) | 0.06 (0.05) | 0.05 (0.06) | 0.02 (0.10) | 0.05 (0.05) | 0.17** (0.08) | 0.07 (0.06) | 0.08 (0.05) | -0.04 (0.06) | -0.11 (0.11) |
| Birth order 2 | 0.00 (0.04) | 0.05 (0.07) | -0.00 (0.05) | 0.04 (0.05) | 0.04 (0.06) | -0.03 (0.10) | 0.05 (0.05) | 0.11 (0.08) | 0.01 (0.06) | 0.03 (0.05) | -0.02 (0.06) | 0.02 (0.11) |
| Vaccines | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00** (0.00) | -0.00 (0.00) | 0.00 (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | -0.00 (0.00) | -0.00* (0.00) |
| Mother's Characteristics: | | | | | | | | | | | | |
| Age at first birth | 0.02*** (0.01) | 0.01 (0.01) | 0.02** (0.01) | 0.03*** (0.01) | 0.03*** (0.01) | 0.02 (0.01) | 0.01** (0.01) | 0.01 (0.01) | 0.02*** (0.01) | 0.02*** (0.01) | 0.02*** (0.01) | 0.01 (0.01) |
| Education: Atmost primary | 0.10** (0.05) | 0.20** (0.08) | 0.18*** (0.06) | 0.10* (0.06) | 0.10 (0.07) | -0.04 (0.12) | 0.09 (0.06) | 0.23** (0.09) | 0.09 (0.07) | 0.05 (0.06) | 0.03 (0.07) | -0.04 (0.13) |
| Education: Above primary | 0.31*** (0.06) | 0.33*** (0.09) | 0.31*** (0.07) | 0.31*** (0.07) | 0.39*** (0.07) | 0.25* (0.13) | 0.24*** (0.06) | 0.45*** (0.08) | 0.28*** (0.06) | 0.23*** (0.06) | 0.22*** (0.07) | 0.11 (0.12) |
| Household's Characteristics: | | | | | | | | | | | | |
| Sanitation: Improved Water | 0.12** (0.05) | -0.04 (0.07) | 0.01 (0.05) | 0.01 (0.05) | 0.14** (0.06) | 0.28*** (0.10) | -0.13** (0.06) | -0.11 (0.08) | -0.14** (0.06) | - (0.05) | - (0.06) | -0.14 (0.11) |
| Sanitation: Improved Toilet | 0.03 (0.07) | -0.15 (0.10) | -0.04 (0.07) | 0.02 (0.07) | 0.06 (0.08) | 0.16 (0.14) | -0.01 (0.07) | -0.07 (0.10) | 0.01 (0.07) | 0.01 (0.06) | -0.02 (0.08) | -0.00 (0.13) |
| Wealth Index | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.00** (0.00) | 0.00 (0.00) | 0.01*** (0.00) | 0.02*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) |
| SC | -0.09 (0.07) | 0.01 (0.08) | -0.07 (0.06) | -0.12* (0.06) | -0.08 (0.07) | -0.15 (0.12) | -0.09 (0.06) | -0.19** (0.08) | -0.11* (0.06) | -0.09 (0.06) | -0.10 (0.07) | -0.07 (0.12) |
| ST | 0.17* (0.09) | 0.04 (0.10) | 0.18** (0.07) | 0.15** (0.07) | 0.13 (0.08) | 0.12 (0.15) | 0.06 (0.07) | 0.01 (0.09) | -0.04 (0.07) | -0.02 (0.06) | 0.04 (0.08) | 0.03 (0.13) |

| | | | | | | | | | | | | |
|---------|-------------------|------------------|-------------------|-------------------|-----------------|-----------------|------------------------|-------------------|-------------------|------------------------|------------------------|------------------------|
| HH Size | -0.01 (0.00) | -0.01* (0.01) | -0.01** (0.01) | -0.01** (0.01) | -0.00 (0.01) | 0.01 (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.01** (0.01) | -0.01 (0.01) | -0.01 (0.01) |
| Punjab | -0.02 (0.11) | 0.22 (0.18) | -0.12 (0.14) | -0.01 (0.13) | -0.00 (0.15) | 0.13 (0.26) | -0.34* (0.18) | -0.15 (0.23) | -0.11 (0.17) | -0.23 (0.15) | -0.39** (0.18) | - 0.95*** (0.32) |
| Haryana | -0.24** (0.10) | -0.11 (0.18) | -0.21 (0.14) | -0.12 (0.13) | -0.16 (0.15) | -0.18 (0.26) | - 0.51*** (0.16) | -0.21 (0.21) | -0.30* (0.16) | - 0.43*** (0.14) | - 0.63*** (0.17) | - 1.16*** (0.29) |
| Delhi | -0.36 (0.24) | -0.34 (0.34) | -0.55** (0.25) | -0.10 (0.25) | -0.19 (0.29) | -0.25 (0.50) | - 0.98*** (0.20) | -1.35** (0.55) | -0.99** (0.42) | -0.94** (0.37) | - 1.17*** (0.44) | -1.53** (0.77) |

| Table A1A contd. Height-for-Age Z-score | NFHS-1: 1992-3 | | | | | | NFHS-3: 2005-6 | | | | | |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|-------------------|-------------------|--------------------|-------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| Uttar Pradesh | -0.54*** (0.09) | -0.50*** (0.15) | -0.67*** (0.11) | -0.42*** (0.11) | -0.42*** (0.12) | -0.41* (0.21) | -0.57*** (0.14) | -0.16 (0.17) | 0.44*** (0.13) | 0.50*** (0.11) | 0.62*** (0.13) | 1.22*** (0.23) |
| Bihar | 0.37*** (0.12) | 0.52*** (0.16) | 0.59*** (0.12) | -0.29** (0.12) | -0.31** (0.14) | 0.09 (0.24) | -0.35** (0.15) | 0.12 (0.18) | -0.25* (0.13) | 0.35*** (0.12) | 0.42*** (0.14) | 1.00*** (0.24) |
| Arunachal Pradesh | -0.35* (0.21) | -0.36 (0.27) | -0.53*** (0.20) | -0.23 (0.20) | -0.32 (0.23) | -0.23 (0.40) | 0.11 (0.23) | 0.20 (0.25) | 0.03 (0.19) | 0.04 (0.17) | 0.03 (0.20) | 0.08 (0.35) |
| Nagaland | 0.34 (0.23) | 0.36 (0.26) | 0.20 (0.19) | 0.39** (0.19) | 0.46** (0.22) | 0.74* (0.38) | 0.01 (0.19) | 0.24 (0.21) | 0.05 (0.16) | 0.05 (0.14) | -0.11 (0.17) | -0.26 (0.29) |
| Manipur | 0.18 (0.18) | 0.30 (0.26) | 0.36* (0.19) | 0.22 (0.19) | 0.22 (0.21) | 0.42 (0.37) | -0.02 (0.17) | 0.28 (0.20) | 0.08 (0.15) | -0.00 (0.14) | -0.12 (0.16) | -0.61** (0.29) |
| Mizoram | -0.30 (0.20) | 0.33 (0.33) | -0.11 (0.25) | -0.24 (0.25) | -0.32 (0.28) | -0.41 (0.49) | -0.29 (0.23) | 0.08 (0.27) | -0.25 (0.21) | -0.37** (0.18) | -0.57*** (0.22) | -0.59 (0.38) |
| Tripura | -0.29* (0.18) | -0.20 (0.28) | -0.23 (0.21) | -0.02 (0.21) | -0.21 (0.24) | -0.37 (0.41) | -0.03 (0.22) | 0.07 (0.27) | -0.01 (0.20) | 0.02 (0.18) | -0.11 (0.21) | -0.26 (0.37) |
| Meghalaya | -0.39 (0.29) | 1.20*** (0.27) | 1.38*** (0.20) | -0.28 (0.20) | 0.21 (0.23) | 1.05*** (0.40) | -0.12 (0.21) | -0.31 (0.24) | -0.07 (0.18) | -0.20 (0.16) | -0.06 (0.19) | 0.05 (0.34) |
| Assam | -0.18 (0.13) | 0.04 (0.19) | -0.18 (0.14) | -0.09 (0.14) | -0.13 (0.16) | -0.11 (0.28) | -0.23 (0.17) | 0.19 (0.21) | -0.09 (0.16) | -0.10 (0.14) | -0.23 (0.16) | 0.77*** (0.29) |
| Orissa | 0.06 (0.14) | -0.03 (0.18) | -0.12 (0.13) | 0.04 (0.13) | 0.17 (0.15) | 0.40 (0.26) | -0.39** (0.16) | 0.28 (0.19) | -0.22 (0.15) | 0.43*** (0.13) | 0.55*** (0.16) | 1.07*** (0.27) |
| Gujarat | -0.17 (0.12) | -0.13 (0.18) | -0.32** (0.13) | -0.11 (0.13) | -0.08 (0.15) | 0.07 (0.26) | 0.65*** (0.16) | -0.18 (0.21) | 0.51*** (0.16) | 0.63*** (0.14) | 0.81*** (0.17) | 1.39*** (0.29) |
| Maharashtra | 0.31*** (0.11) | -0.14 (0.18) | -0.28** (0.14) | -0.16 (0.13) | -0.32** (0.15) | 0.55** (0.27) | 0.52*** (0.16) | -0.02 (0.21) | 0.42*** (0.16) | 0.57*** (0.14) | 0.61*** (0.17) | 1.03*** (0.29) |
| Karnataka | -0.23** (0.11) | 0.06 (0.17) | -0.15 (0.13) | -0.11 (0.13) | -0.16 (0.14) | -0.27 (0.25) | -0.25 (0.18) | -0.05 (0.20) | -0.36** (0.15) | 0.39*** (0.14) | -0.32** (0.16) | -0.58** (0.28) |
| Goa | 0.21* (0.12) | 0.37* (0.21) | 0.13 (0.16) | 0.29* (0.15) | 0.34* (0.17) | 0.26 (0.30) | -0.20 (0.20) | 0.22 (0.26) | -0.15 (0.20) | -0.22 (0.17) | -0.34* (0.21) | -0.77** (0.36) |
| Kerala | 0.18 (0.13) | 0.47** (0.19) | 0.33** (0.14) | 0.30** (0.14) | 0.17 (0.16) | 0.20 (0.27) | 0.08 (0.17) | 0.36 (0.23) | 0.04 (0.18) | -0.05 (0.16) | -0.12 (0.19) | -0.42 (0.33) |
| Constant | 1.11*** (0.17) | 3.12*** (0.24) | 1.78*** (0.18) | 1.31*** (0.18) | -0.52** (0.20) | 0.98*** (0.36) | 0.61*** (0.21) | 3.77*** (0.27) | 1.98*** (0.20) | 0.72*** (0.18) | 0.45** (0.22) | 2.70*** (0.38) |
| Observations | 9489 | 9489 | 9489 | 9489 | 9489 | 9489 | 7598 | 7598 | 7598 | 7598 | 7598 | 7598 |
| r2 | 0.19 | | | | | | 0.16 | | | | | |

Source: Author estimates from NFHS-1 (1992-3) and NFHS-3 (2005-6)

Note: Base category is rural Jammu & Kashmir girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or other category household having poor drinking water and toilet facility. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent respectively

Table A1B: Mean and quantile regression estimates of WAZ of rural girls under four years, by NFHS round (state fixed effects)

| Weight-for-Age Z-score | NFHS-1: 1992-3 | | | | | | NFHS-3: 2005-6 | | | | | |
|------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| Child Characteristics: | | | | | | | | | | | | |
| Age | - 0.06*** (0.01) | - 0.06*** (0.01) | - 0.06*** (0.01) | - 0.06*** (0.00) | - 0.05*** (0.01) | - 0.06*** (0.01) | - 0.04*** (0.00) | - 0.04*** (0.01) | - 0.04*** (0.01) | - 0.04*** (0.01) | - 0.04*** (0.01) | - 0.05*** (0.01) |
| Age squared | 0.08*** (0.01) | 0.09*** (0.02) | 0.08*** (0.01) | 0.08*** (0.01) | 0.07*** (0.01) | 0.07*** (0.01) | 0.05*** (0.01) | 0.06*** (0.02) | 0.05*** (0.01) | 0.05*** (0.01) | 0.05*** (0.01) | 0.06*** (0.02) |
| Birth order 1 | 0.06 (0.04) | 0.07 (0.07) | 0.08* (0.04) | 0.05 (0.04) | 0.03 (0.05) | -0.02 (0.06) | 0.09** (0.04) | 0.20*** (0.08) | 0.10** (0.05) | 0.11** (0.05) | 0.04 (0.04) | -0.02 (0.07) |
| Birth order 2 | 0.01 (0.04) | 0.04 (0.07) | 0.04 (0.04) | 0.00 (0.04) | -0.00 (0.05) | -0.02 (0.06) | 0.04 (0.04) | 0.14* (0.08) | 0.04 (0.05) | 0.03 (0.05) | 0.01 (0.04) | -0.05 (0.07) |
| Vaccines | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00* (0.00) | -0.00** (0.00) |
| Mother's Characteristics: | | | | | | | | | | | | |
| Age at first birth | 0.01*** (0.01) | 0.02** (0.01) | 0.01** (0.01) | 0.01** (0.01) | 0.02*** (0.01) | 0.02*** (0.01) | 0.01 (0.00) | 0.00 (0.01) | 0.01 (0.01) | 0.02*** (0.01) | 0.01*** (0.01) | 0.01 (0.01) |
| Education: At most primary | 0.10** (0.05) | 0.18** (0.08) | 0.11** (0.05) | 0.09* (0.05) | 0.10* (0.05) | 0.06 (0.07) | 0.02 (0.05) | -0.07 (0.09) | 0.04 (0.06) | 0.03 (0.06) | 0.01 (0.05) | -0.01 (0.08) |
| Education: Above primary | 0.34*** (0.05) | 0.42*** (0.09) | 0.32*** (0.06) | 0.35*** (0.06) | 0.38*** (0.06) | 0.35*** (0.08) | 0.18*** (0.04) | 0.23*** (0.08) | 0.20*** (0.05) | 0.15*** (0.05) | 0.18*** (0.05) | 0.17** (0.07) |
| Household's Characteristics: | | | | | | | | | | | | |
| Sanitation: Improved Water | 0.04 (0.04) | -0.03 (0.07) | -0.06 (0.04) | 0.00 (0.04) | 0.09* (0.04) | 0.14** (0.06) | -0.08* (0.04) | -0.13* (0.07) | -0.04 (0.05) | -0.06 (0.05) | -0.10** (0.04) | - 0.18*** (0.07) |
| Sanitation: Improved Toilet | 0.07 (0.06) | 0.01 (0.10) | 0.11* (0.06) | 0.12* (0.06) | 0.10 (0.07) | 0.01 (0.09) | -0.03 (0.05) | 0.09 (0.09) | 0.03 (0.06) | -0.03 (0.06) | -0.05 (0.06) | -0.13* (0.08) |
| Wealth Index | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.00** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) |

| | | | | | | | | | | | | |
|---------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| SC | -0.16*** (0.05) | -0.19** (0.08) | -0.15*** (0.05) | -0.14*** (0.05) | -0.14** (0.06) | -0.19*** (0.07) | -0.14*** (0.04) | -0.21*** (0.08) | -0.18*** (0.05) | -0.13** (0.05) | -0.11** (0.05) | -0.11 (0.07) |
| ST | 0.05 (0.07) | -0.08 (0.10) | 0.07 (0.07) | 0.08 (0.06) | 0.08 (0.07) | 0.00 (0.09) | -0.02 (0.05) | -0.13 (0.09) | -0.04 (0.06) | -0.04 (0.06) | 0.01 (0.05) | 0.01 (0.08) |
| HH Size | -0.01 (0.00) | -0.02** (0.01) | -0.01** (0.00) | -0.00 (0.00) | 0.00 (0.00) | -0.00 (0.01) | -0.01 (0.00) | 0.00 (0.01) | -0.01 (0.01) | -0.01** (0.01) | -0.01 (0.01) | -0.01 (0.01) |
| Punjab | -0.15* (0.08) | 0.07 (0.18) | -0.14 (0.12) | -0.12 (0.12) | -0.16 (0.13) | -0.33** (0.16) | -0.29** (0.13) | -0.42* (0.22) | -0.27* (0.15) | -0.18 (0.14) | -0.14 (0.13) | -0.36* (0.20) |
| Haryana | 0.19** (0.08) | 0.49*** (0.18) | 0.30** (0.12) | 0.20* (0.11) | 0.20 (0.13) | -0.06 (0.16) | -0.60*** (0.11) | -0.55*** (0.21) | -0.54*** (0.14) | -0.55*** (0.13) | -0.60*** (0.12) | -0.77*** (0.18) |
| Delhi | -0.36* (0.20) | -0.13 (0.34) | -0.25 (0.22) | -0.28 (0.21) | -0.35 (0.23) | -0.29 (0.30) | -0.70*** (0.15) | -0.97* (0.54) | -0.75** (0.36) | -0.51 (0.35) | -0.45 (0.32) | -1.08** (0.48) |
| Rajasthan | 0.82*** (0.15) | 0.06 (0.17) | 0.19* (0.11) | 0.54*** (0.10) | 1.23*** (0.11) | 2.29*** (0.15) | -0.42*** (0.11) | -0.51*** (0.19) | -0.26** (0.12) | -0.27** (0.12) | -0.38*** (0.11) | -0.63*** (0.16) |
| Uttar Pradesh | -0.28*** (0.07) | -0.29** (0.15) | -0.32*** (0.10) | -0.26*** (0.09) | -0.21** (0.10) | -0.27** (0.13) | -0.48*** (0.10) | -0.48*** (0.16) | -0.33*** (0.11) | -0.40*** (0.10) | -0.50*** (0.10) | -0.58*** (0.14) |

| Table A1B contd. Weight-for-Age Z-score | NFHS-1: 1992-3 | | | | | | NFHS-3: 2005-6 | | | | | |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| Bihar | 0.38** (0.16) | 0.40 (0.27) | 0.30* (0.17) | 0.43*** (0.17) | 0.30* (0.18) | 0.40* (0.24) | 0.04 (0.16) | -0.29 (0.24) | -0.04 (0.16) | 0.07 (0.16) | 0.19 (0.14) | 0.12 (0.21) |
| Arunachal Pradesh | 0.75*** (0.17) | 0.90*** (0.26) | 0.74*** (0.17) | 0.51*** (0.16) | 0.68*** (0.18) | 0.91*** (0.23) | 0.17 (0.13) | 0.27 (0.20) | 0.28** (0.14) | 0.19 (0.13) | 0.15 (0.12) | -0.01 (0.18) |
| Nagaland | 0.62*** (0.15) | 0.88*** (0.26) | 0.58*** (0.17) | 0.50*** (0.16) | 0.53*** (0.18) | 0.51** (0.23) | 0.12 (0.11) | 0.24 (0.20) | 0.24* (0.13) | 0.09 (0.13) | 0.03 (0.12) | -0.11 (0.18) |
| Manipur | 0.46** (0.18) | 0.69** (0.34) | 0.30 (0.22) | 0.25 (0.21) | 0.54** (0.23) | 0.54* (0.30) | 0.05 (0.14) | 0.39 (0.27) | 0.20 (0.18) | 0.00 (0.17) | -0.13 (0.16) | -0.28 (0.23) |
| Mizoram | -0.12 (0.15) | -0.10 (0.27) | 0.03 (0.18) | 0.00 (0.17) | -0.17 (0.18) | -0.32 (0.24) | -0.38** (0.18) | - 1.02*** (0.26) | -0.38** (0.17) | -0.18 (0.17) | -0.20 (0.15) | -0.30 (0.23) |
| Tripura | 0.32 (0.21) | -0.20 (0.26) | 0.02 (0.17) | 0.32* (0.16) | 0.68*** (0.18) | 1.08*** (0.23) | - 1.02*** (0.18) | - 1.60*** (0.24) | - 1.02*** (0.16) | - 0.78*** (0.15) | - 0.74*** (0.14) | - 0.81*** (0.21) |
| Meghalaya | 0.02 (0.10) | 0.36* (0.19) | 0.08 (0.13) | 0.02 (0.12) | -0.01 (0.13) | -0.14 (0.17) | -0.24** (0.12) | -0.12 (0.20) | -0.15 (0.13) | -0.22* (0.13) | -0.25** (0.12) | -0.32* (0.18) |
| Assam | 0.10 (0.11) | 0.04 (0.18) | -0.08 (0.12) | -0.00 (0.11) | 0.11 (0.12) | 0.46*** (0.16) | - 0.41*** (0.11) | -0.22 (0.19) | -0.22* (0.13) | - 0.44*** (0.12) | - 0.46*** (0.11) | - 0.71*** (0.17) |
| Orissa | -0.21** (0.08) | 0.03 (0.18) | -0.20* (0.12) | -0.17 (0.11) | -0.25** (0.12) | - 0.33** (0.16) | - 0.69*** (0.12) | - 0.82*** (0.21) | - 0.52** (0.14) | - 0.58*** (0.13) | - 0.64*** (0.12) | - 0.86*** (0.18) |
| Gujarat | - 0.33*** (0.10) | -0.27 (0.19) | - 0.39*** (0.12) | - 0.38*** (0.12) | - 0.34*** (0.13) | - 0.39** (0.16) | - 0.62*** (0.11) | - 0.55*** (0.20) | - 0.52** (0.14) | - 0.63*** (0.13) | - 0.59*** (0.12) | - 0.79*** (0.18) |
| Maharashtra | -0.22** (0.09) | -0.12 (0.17) | -0.16 (0.11) | -0.19* (0.11) | -0.24** (0.12) | - 0.32** (0.16) | - 0.40*** (0.12) | -0.48** (0.20) | - 0.37*** (0.13) | - 0.39*** (0.13) | - 0.36*** (0.12) | -0.42** (0.17) |
| Karnataka | 0.21* (0.11) | 0.31 (0.21) | 0.17 (0.14) | 0.21 (0.13) | 0.21 (0.14) | 0.21 (0.19) | - 0.38*** (0.14) | -0.47* (0.26) | - 0.46*** (0.17) | - 0.43*** (0.16) | -0.23 (0.15) | -0.46** (0.22) |
| Goa | 0.23** (0.10) | 0.46** (0.19) | 0.24* (0.12) | 0.24** (0.12) | 0.16 (0.13) | 0.01 (0.17) | - 0.32*** (0.12) | -0.39* (0.23) | -0.24 (0.15) | -0.29** (0.15) | - 0.39*** (0.14) | -0.38* (0.20) |
| Kerala | - 1.71*** (0.14) | - 3.68*** (0.24) | - 2.34*** (0.16) | - 1.68*** (0.15) | - 1.22*** (0.17) | -0.20 (0.22) | - 1.34*** (0.15) | - 3.20*** (0.26) | - 2.20*** (0.17) | - 1.44*** (0.17) | - 0.65*** (0.16) | 0.82*** (0.23) |
| Observations | 9794 | 9794 | 9794 | 9794 | 9794 | 9794 | 7787 | 7787 | 7787 | 7787 | 7787 | 7787 |

| | | |
|----------------|------|------|
| r ² | 0.13 | 0.15 |
|----------------|------|------|

Source: Author estimates from NFHS-1 (1992-3) and NFHS-3 (2005-6)

Note: Base category is rural Jammu & Kashmir girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or other category household having poor drinking water and toilet facility. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent respectively

Table A2: Change^a in mean and quantile regression estimates of anthropometric outcomes of rural girls between 1992/93 and 2005/06 (state fixed effects)

| | Change in Height-for-Age Z-scores | | | | | | Change in Weight-for-Age Z-scores | | | | | |
|-------------------------------------|-----------------------------------|-----------------------|------------------|-----------------------|-------------------------|----------------------------|-----------------------------------|------------------|----------------------|----------------------------|-------------------------|-------------------------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| <i>Child Characteristics:</i> | | | | | | | | | | | | |
| Age | 0.01 (0.01) | 0.03** * (0.01) | 0.02* (0.01) | 0.004 (0.01) | -0.004 (0.01) | 0.004 (0.02) | 0.02** (0.01) | 0.02 (0.01) | 0.02* * (0.01) | 0.02** (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| Age squared | 0.000 (0.02) | - 0.04** (0.02) | -0.01 (0.02) | 0.01 (0.02) | 0.03 (0.02) | 0.001 (0.04) | - 0.03** (0.01) | -0.03 (0.03) | -0.03 (0.02) | -0.02 (0.02) | -0.01 (0.01) | -0.02 (0.02) |
| Birth order 1 | -0.01 (0.07) | 0.07 (0.11) | 0.05 (0.08) | 0.02 (0.07) | -0.06 (0.08) | -0.14 (0.15) | 0.04 (0.06) | 0.13 (0.10) | 0.03 (0.07) | 0.05 (0.07) | 0.01 (0.07) | -0.02 (0.09) |
| Birth order 2 | 0.04 (0.07) | 0.09 (0.11) | 0.03 (0.08) | 0.01 (0.07) | -0.04 (0.08) | 0.004 (0.15) | 0.02 (0.05) | 0.08 (0.10) | 0.01 (0.07) | 0.03 (0.06) | 0.02 (0.07) | -0.003 (0.09) |
| Vaccines | -0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | - 0.001** (0.001) | - 0.003* (0.002) | 0.000 (0.001) | 0.001 (0.001) | 0.000 (0.001) | 0.000 (0.001) | 0.000 (0.001) | 0.000 (0.001) |
| <i>Mother's Characteristics:</i> | | | | | | | | | | | | |
| Age at first birth | -0.01 (0.01) | -0.001 (0.01) | 0.003 (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.01 (0.02) | -0.01 (0.01) | -0.02 (0.01) | -0.002 (0.01) | 0.001 (0.01) | -0.01 (0.01) | -0.02 (0.01) |
| Education: At most primary | -0.01 (0.08) | -0.001 (0.12) | -0.07 (0.08) | -0.05 (0.08) | -0.06 (0.08) | 0.05 (0.18) | -0.08 (0.06) | -0.23* (0.14) | -0.07 (0.08) | -0.05 (0.07) | -0.22 (0.07) | -0.08 (0.09) |
| Education: Above primary | -0.06 (0.08) | 0.13 (0.14) | -0.04 (0.10) | -0.08 (0.08) | -0.17* (0.09) | -0.13 (0.16) | - 0.17** (0.06) | -0.16 (0.12) | -0.13* (0.08) | - 0.19** * (0.07) | - 0.18** (0.07) | -0.17* (0.10) |
| <i>Household's Characteristics:</i> | | | | | | | | | | | | |
| Sanitation: Improved Water | - 0.25** * (0.07) | -0.06 (0.11) | -0.15* (0.08) | - 0.15** (0.07) | - 0.32*** (0.08) | - 0.41** * (0.14) | - 0.13** (0.06) | -0.08 (0.11) | 0.02 (0.07) | -0.06 (0.07) | -0.18** (0.07) | - 0.29*** (0.09) |
| Sanitation: Improved Toilet | -0.05 (0.09) | 0.07 (0.14) | 0.05 (0.11) | -0.02 (0.09) | -0.06 (0.10) | -0.22 (0.19) | -0.09 (0.07) | -0.01 (0.13) | -0.10 (0.08) | - 0.15** (0.07) | -0.16** (0.08) | -0.16 (0.12) |
| Wealth Index | 0.004* * (0.002) | 0.004 (0.004) | 0.001 (0.002) | 0.004 * (0.002) | 0.007** * (0.002) | 0.009* * (0.004) | 0.01** * (0.001) | 0.002 (0.003) | 0.003 (0.001) | 0.004* * (0.002) | 0.007** * (0.002) | 0.009** * (0.003) |

| | | | | | | | | | | | | |
|---------|------------------|-----------------|-----------------|------------------|--------------------|------------------------|------------------------|----------------------------|----------------------------|------------------------|--------------------|--------------------|
| SC | 0.000 (0.08) | -0.17 (0.11) | -0.02 (0.19) | 0.05 (0.09) | -0.003 (0.10) | 0.10 (0.17) | 0.02 (0.06) | -0.07 (0.12) | -0.02 (0.07) | -0.001 (0.08) | 0.02 (0.06) | 0.11 (0.10) |
| ST | -0.10 (0.10) | -0.06 (0.15) | -0.17 (0.11) | -0.14 (0.10) | -0.06 (0.11) | -0.000 (0.23) | -0.07 (0.09) | -0.04 (0.15) | -0.10 (0.11) | -0.10 (0.09) | -0.08 (0.10) | 0.04 (0.14) |
| HH Size | -0.000 (0.01) | 0.01 (0.01) | 0.002 (0.01) | -0.002 (0.01) | -0.01 (0.01) | -0.02 (0.02) | -0.000 (0.01) | 0.02 (0.01) | 0.004 (0.01) | -0.01 (0.01) | -0.01 (0.01) | -0.01 (0.01) |
| Punjab | -0.32* (0.18) | -0.38 (0.28) | 0.004 (0.20) | -0.18 (0.21) | -0.35 (0.22) | - 0.88*** (0.32) | -0.12 (0.14) | -0.39 (0.30) | -0.09 (0.19) | -0.11 (0.17) | 0.00 (0.19) | -0.11 (0.22) |
| Haryana | -0.25 (0.17) | -0.17 (0.32) | -0.07 (0.18) | -0.28 (0.20) | -0.47*** (0.18) | -0.83** (0.40) | - 0.79*** (0.13) | - 0.99** * (0.28) | - 0.82** * (0.19) | - 0.77*** (0.16) | -0.81*** (0.17) | -0.76*** (0.23) |
| Delhi | -0.62 (0.48) | -0.96 (0.70) | -0.46 (0.59) | -0.82* (0.49) | -0.86* (0.49) | -0.77 (1.44) | -0.33 (0.32) | -0.76 (0.55) | -0.53 (0.65) | -0.23 (0.43) | -0.13 (0.32) | -0.43 (0.91) |

| Table A2 contd. | Change in Height-for-Age Z-scores | | | | | | Change in Weight-for-Age Z-scores | | | | | |
|-------------------|-----------------------------------|--------|--------|--------|---------|---------|-----------------------------------|---------|---------|---------|---------|---------|
| | Mean | P10 | P30 | P50 | P70 | P90 | Mean | P10 | P30 | P50 | P70 | P90 |
| Rajasthan | - | 0.37 | -0.14 | - | - | - | -1.25** | -0.49 | -0.44** | - | 1.62*** | - |
| | 0.96*** | (0.31) | (0.19) | 0.52** | 1.36*** | 3.61*** | (0.15) | (0.30) | (0.19) | 0.85*** | (0.20) | 2.98*** |
| | (0.19) | | | (0.24) | (0.27) | (0.39) | | | | (0.18) | | (0.24) |
| Uttar Pradesh | -0.03 | -0.26 | 0.24 | -0.03 | -0.19 | -0.67** | -0.20 | -0.14 | -0.02 | -0.18 | -0.30* | -0.32* |
| | (0.15) | (0.23) | (0.15) | (0.18) | (0.17) | (0.27) | (0.11) | (0.24) | (0.17) | (0.12) | (0.13) | (0.19) |
| Bihar | 0.02** | 0.59** | 0.34** | 0.001 | -0.11 | - | -0.53* | -0.32 | -0.24 | - | - | - |
| | (0.16) | (0.23) | (0.16) | (0.19) | (0.18) | 0.94*** | (0.13) | (0.26) | (0.18) | 0.46*** | 0.61*** | 0.91*** |
| | | | | | | (0.31) | | | | (0.14) | (0.15) | (0.21) |
| Arunachal Pradesh | 0.47* | 0.66** | 0.54* | 0.34 | 0.32 | 0.14 | 0.35* | 0.56 | -0.29 | 0.44* | -0.11 | -0.32* |
| | (0.26) | (0.39) | (0.31) | (0.25) | (0.38) | (0.56) | (0.20) | (0.41) | (0.25) | (0.25) | (0.24) | (0.35) |
| Nagaland | -0.31 | -0.15 | -0.20 | -0.31 | -0.62* | -0.94* | -0.58 | -0.61* | -0.43** | -0.38* | -0.53* | - |
| | (0.21) | (0.40) | (0.24) | (0.25) | (0.33) | (0.56) | (0.19) | (0.33) | (0.23) | (0.22) | (0.25) | 0.90*** |
| | | | | | | | | | | | | (0.36) |
| Manipur | 0.17 | 0.01 | -0.24 | -0.15 | -0.30 | -0.81* | -0.51 | -0.55** | -0.36 | - | -0.49* | - |
| | (0.23) | (0.48) | (0.28) | (0.23) | (0.27) | (0.46) | (0.16) | (0.28) | (0.22) | 0.47*** | (0.20) | 0.68*** |
| | | | | | | | | | | (0.19) | | (0.27) |
| Mizoram | 0.004 | -0.23 | -0.17 | -0.11 | -0.22 | -0.02 | -0.40 | -0.27 | -0.15 | -0.33 | -0.60** | -0.80** |
| | (0.27) | (0.52) | (0.27) | (0.27) | (0.35) | (0.52) | (0.18) | (0.37) | (0.26) | (0.22) | (0.26) | (0.38) |
| Tripura | 0.28 | 0.31 | 0.23 | 0.14 | 0.13 | 0.20 | -0.26 | -0.84 | -0.33 | 0.19 | -0.03 | 0.01 |
| | (0.25) | (0.41) | (0.30) | (0.30) | (0.27) | (0.37) | (0.20) | (0.51) | (0.26) | (0.20) | (0.21) | (0.33) |
| Meghalaya | 0.27 | 0.99** | 1.21** | 0.28 | -0.33 | -1.02 | -1.34 | - | - | - | - | -1.92** |
| | (0.30) | (0.39) | (0.36) | (0.40) | (0.40) | (0.63) | (0.21) | 1.35*** | 1.02*** | 1.17*** | 1.41*** | (0.40) |
| | | | | | | | | (0.35) | (0.37) | (0.26) | (0.34) | |
| Assam | -0.04 | 0.10 | 0.09 | 0.05 | -0.11 | -0.52 | -0.25 | -0.38 | -0.21 | -0.28 | -0.24 | -0.24 |
| | (0.18) | (0.28) | (0.21) | (0.21) | (0.23) | (0.33) | (0.15) | (0.32) | (0.21) | (0.18) | (0.16) | (0.24) |
| Orissa | - | 0.21 | -0.10 | - | - | - | -0.52*** | -0.26 | -0.17 | -0.44** | - | - |
| | 0.43*** | (0.24) | (0.17) | 0.42** | 0.69*** | 1.40*** | (0.14) | (0.27) | (0.19) | (0.16) | 0.56*** | 1.07*** |
| | (0.17) | | | (0.20) | (0.22) | (0.35) | | | | | (0.17) | (0.26) |
| Gujarat | - | -0.11 | -0.17 | - | - | - | -0.47*** | -0.74 | -0.32* | - | - | - |
| | 0.47*** | (0.30) | (0.17) | 0.46** | 0.70*** | 1.31*** | (0.12) | (0.30) | (0.18) | 0.42*** | 0.42*** | 0.56*** |
| | (0.16) | | | (0.19) | (0.18) | (0.33) | | | | (0.15) | (0.16) | (0.22) |
| Maharashtra | -0.20 | 0.06 | -0.16 | -0.36* | -0.30 | -0.38** | -0.28 | 0.27 | -0.17 | -0.28* | -0.27* | -0.37* |
| | (0.19) | (0.26) | (0.19) | (0.20) | (0.23) | (0.41) | (0.14) | (0.29) | (0.20) | (0.17) | (0.16) | (0.22) |
| Karnataka | 0.01 | -0.17 | -0.20 | -0.18 | -0.16 | -0.02 | -0.17 | -0.33 | -0.24 | -0.26* | -0.15 | -0.12 |
| | (0.17) | (0.23) | (0.18) | (0.21) | (0.19) | (0.39) | (0.13) | (0.28) | (0.18) | (0.14) | (0.15) | (0.22) |
| Goa | -0.39** | -0.15 | -0.20 | - | -0.57** | -0.90** | -0.61*** | -0.70** | - | - | -0.49** | - |
| | (0.20) | (0.30) | (0.25) | 0.46** | (0.23) | (0.36) | (0.15) | (0.28) | 0.62*** | 0.64*** | (0.20) | 0.71*** |
| | | | | (0.23) | | | | | (0.24) | (0.21) | | (0.30) |
| Kerala | -0.09 | -0.12 | -0.26 | - | -0.29 | -0.46 | -0.54*** | -0.75** | -0.50** | - | - | -0.48* |
| | (0.17) | (0.30) | (0.20) | 0.27** | (0.21) | (0.34) | (0.14) | (0.29) | (0.20) | 0.54*** | 0.55*** | (0.27) |
| | | | | (0.21) | | | | | | (0.15) | (0.16) | |
| Constant | 0.48* | -0.57 | -0.18 | 0.52* | 1.01*** | 1.65*** | 0.36*** | -0.39 | 0.11 | 0.30* | 0.56** | 0.88** |
| | (0.26) | (0.37) | (0.27) | (0.28) | (0.28) | (0.52) | (0.19) | (0.41) | (0.25) | (0.22) | (0.26) | (0.35) |
| Observations | 9489 | 9489 | 9489 | 9489 | 9489 | 9489 | 7598 | 7598 | 7598 | 7598 | 7598 | 7598 |

Source: Author estimates from NFHS-1 (1992-3) and NFHS-3 (2005-6)

Note: Base category is rural Jammu & Kashmir girl of birth order 3 or more born to an illiterate mother, who was married in an OBC or other category household having poor drinking water and toilet facility. Robust standard errors clustered at the PSU level are reported in parentheses for OLS. QR standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent respectively

Table A3: The aggregate Oaxaca-Blinder decomposition using 1992/93 coefficients to create the counterfactual

| | Change in Height-for-Age Z-scores | | Change in Weight-for-Age Z-scores | |
|---------------------------|-----------------------------------|-------------------|-----------------------------------|-------------------|
| | Estimate | % of Total Change | Estimate | % of Total Change |
| Covariate Effect | 0.13*** (0.02) | 36 | 0.15*** (0.02) | 109 |
| Coefficient Effect | 0.23*** (0.04) | 64 | -0.01 (0.02) | -9 |
| Total Change ^a | 0.36*** (0.03) | | 0.14*** (0.03) | |
| Observations | 17087 | | 17581 | |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93].

The data refer to young girls under four years of age. Robust standard errors clustered at the PSU level are reported in parentheses. ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table A4: The Machado-Mata decomposition using 1992/93 coefficients to create the counterfactual distribution

| Percentile | Change in Height-for-Age Z-score | | | | | Change in Weight-for-Age Z-score | | | | |
|------------|----------------------------------|------------------|-------------------|--------------------|-------------------|----------------------------------|------------------|-------------------|--------------------|-------------------|
| | Total Change ^a | Covariate Effect | | Coefficient Effect | | Total Change | Covariate Effect | | Coefficient Effect | |
| | | Estimate | % of Total Change | Estimate | % of Total Change | | Estimate | % of Total Change | Estimate | % of Total Change |
| 10 | 0.57** * | 0.17** * | 30 | 0.41** * | 70 | 0.30** * | 0.19** * | 65 | 0.11** * | 35 |
| | (0.06) | (0.06) | | (0.06) | | (0.06) | (0.06) | | (0.06) | |
| 20 | 0.51** * | 0.17** * | 32 | 0.35** * | 68 | 0.27** * | 0.18** * | 68 | 0.09** * | 32 |
| | (0.05) | (0.05) | | (0.05) | | (0.04) | (0.04) | | (0.04) | |
| 30 | 0.43** * | 0.16** * | 36 | 0.29** * | 64 | 0.24** * | 0.17** * | 72 | 0.07** * | 28 |
| | (0.04) | (0.05) | | (0.04) | | (0.04) | (0.04) | | (0.04) | |
| 40 | 0.38** * | 0.15** * | 40 | 0.23** * | 60 | 0.21** * | 0.17** * | 80 | 0.04 * | 20 |
| | (0.04) | (0.04) | | (0.04) | | (0.04) | (0.04) | | (0.03) | |
| 50 | 0.35** * | 0.15** * | 44 | 0.20** * | 56 | 0.17** * | 0.16** * | 93 | 0.01 * | 7 |
| | (0.04) | (0.04) | | (0.04) | | (0.03) | (0.04) | | (0.03) | |
| 60 | 0.32** * | 0.15** * | 47 | 0.17** * | 53 | 0.14** * | 0.16** * | 108 | -0.01 * | -8 |
| | (0.05) | (0.04) | | (0.04) | | (0.03) | (0.03) | | (0.03) | |
| 70 | 0.29** * | 0.14** * | 49 | 0.15** * | 51 | 0.12** * | 0.15** * | 130 | -0.03 * | -30 |
| | (0.05) | (0.05) | | (0.04) | | (0.03) | (0.04) | | (0.03) | |
| 80 | 0.28** * | 0.12** * | 43 | 0.16** * | 57 | 0.08** * | 0.14** * | 179 | -0.06 * | -68 |
| | (0.05) | (0.05) | | (0.06) | | (0.04) | (0.04) | | (0.04) | |

| | | | | | | | | | | |
|----|-------------|--------|----|--------|----|--------|--------|------|--------|-------|
| 90 | 0.29** * | 0.09 | 31 | 0.20** | 69 | -0.01 | 0.09** | 1488 | -0.10* | -1588 |
| | (0.7) | (0.08) | | (0.07) | | (0.05) | (0.05) | | (0.05) | |

Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93].

The data refer to young girls under four years of age. Standard errors in parentheses are bootstrapped using 200 replications; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Table A5: The disaggregate Oaxaca-Blinder decomposition using 1992/93 coefficients to create the counterfactual

| | Change in Height-for-Age Z-scores | | | | Change in Weight-for-Age Z-scores | | | |
|-----------------------------------|-----------------------------------|-------------------|--------------------|-------------------|-----------------------------------|-------------------|--------------------|-------------------|
| | Covariate Effect | | Coefficient Effect | | Covariate Effect | | Coefficient Effect | |
| | Estimate | % of Total Change | Estimate | % of Total Change | Estimate | % of Total Change | Estimate | % of Total Change |
| <i>Child Characteristics:</i> | | | | | | | | |
| Age | -0.04*** (0.01) | -12 | 0.18** (0.09) | 51 | -0.01*** (0.00) | -11 | 0.16** (0.07) | 118 |
| Birth order | 0.00 (0.00) | 1 | -0.00 (0.03) | -1 | 0.00 (0.00) | 2 | -0.01 (0.02) | -7 |
| Vaccines | 0.04*** (0.01) | 9 | -0.09 (0.06) | -25 | 0.02* (0.01) | 13 | -0.00 (0.04) | -1 |
| <i>Mother Characteristics:</i> | | | | | | | | |
| Age at first birth | 0.02*** (0.00) | 6 | -0.25 (0.17) | -67 | 0.02*** (0.00) | 13 | -0.18 (0.14) | -135 |
| Education | 0.06*** (0.01) | 15 | -0.04 (0.04) | -10 | 0.06*** (0.01) | 44 | -0.06** (0.03) | -42 |
| <i>Household Characteristics:</i> | | | | | | | | |
| Improved drinking water | 0.00 (0.00) | 0 | -0.21*** (0.05) | -57 | -0.00 (0.00) | -2 | -0.09** (0.04) | -67 |
| Improved toilet | 0.01 (0.01) | 2 | 0.01 (0.03) | 2 | 0.02*** (0.01) | 17 | -0.04* (0.02) | -29 |
| Wealth Index | 0.02*** (0.01) | 5 | 0.12* (0.06) | 32 | 0.02*** (0.01) | 11 | 0.17*** (0.05) | 122 |
| SC/ST | 0.02*** (0.01) | 6 | -0.04 (0.03) | -11 | 0.02*** (0.01) | 16 | -0.07*** (0.02) | -49 |
| HH Size | 0.01** (0.01) | 3 | 0.01 (0.05) | 2 | 0.01* (0.00) | 6 | -0.02 (0.05) | -17 |
| Constant | | | 0.54*** (0.20) | 149 | | | 0.13 (0.16) | 99 |
| Total Change ^a | 0.13*** (0.02) | 36 | 0.23*** (0.04) | 64 | 0.15*** (0.02) | 109 | -0.01 (0.02) | -9 |
| Observations | 17087 | | | | 17581 | | | |

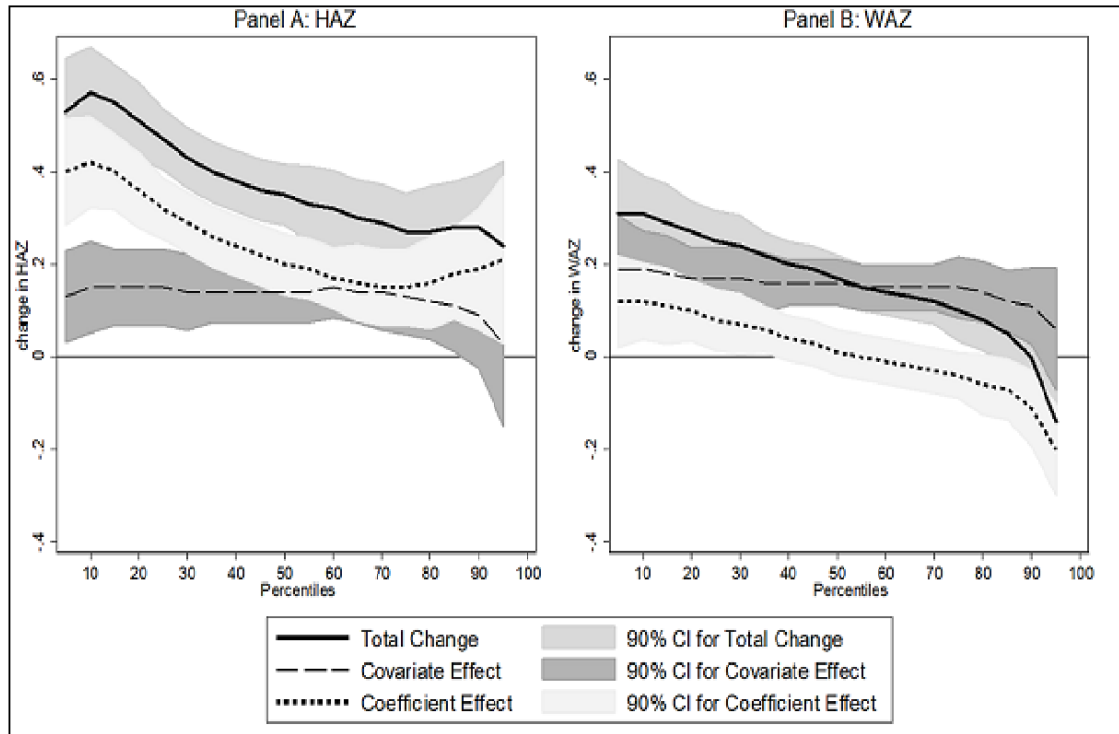
Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: a- Change is calculated as [Estimates in 2005/06 - Estimates in 1992/93].

The data refer to young girls under four years of age. Robust standard errors clustered at the PSU level are reported in parentheses; ***, ** and * indicate significance at 1, 5, and 10 percent, respectively.

Appendix Figures

Figure A1: The Machado-Mata decomposition using 1992/93 coefficients to create the counterfactual distribution



Source: Author's estimates from NFHS-1 (1992/93) and NFHS-3 (2005/06)

Notes: The data refer to young girls under four years of age. The 90 percent confidence bands are obtained using the bootstrap technique (200 replications).

**Identity Development and Familial Relations
(Particularly with respect to Adolescence in India)**

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ABSTRACT

The paper is focused on analyzing the representations of family and familial relations in fictional narratives depicting vignettes of adolescences in India. The focus is on the role that family plays in being a critical counter player in building up an individual's reciprocity with his/her social environment. Examining literary works enables an in-depth engagement with different facets of adolescence identity development and localizing it in the Indian cultural context. For the same, the works of contemporary Indian writers in English which complemented the context have been chosen.²

Keywords: adolescence, literature, identity, development

1. INTRODUCTION

When a reference is made to education, it cannot be limited to the ambit of schooling. Besides academics, education, viewed from a holistic perspective, involves the overall development of the individual: within which development of identity and the forging of self is an integral aspect. Of pertinent concern is the role of the familial milieu, a concern which cannot be overlooked. Taking into consideration these aspects this paper intends to focus upon the role of family in development of identity, particularly during adolescence. The major focus is on the ramifications that a family has as a contributory factor, in the process of forging of a distinct sense of self which adolescents are in the process of developing at this life stage. The attempt is to understand and bring to fore how family, amidst the gamut of other significant factors, offers a fundamental and vital context for adolescent identity development. Thus the focus is on what role does a family play in being a critical counter player in building up an individual's

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reciprocity with his/her social environment. Also the focus is on how families aid in building emotional affiliations and can help nurture communities of excellence where everyone can contribute to the development of the child and make education a mass movement, with a right blend of tradition and modernity.

For the same the paper has been divided into three sections. The first section offers an insight into the methodological framework of the study. The second section offers an analysis of the role of family from the standpoint of insights drawn from the novels chosen. An attempt has also been made to focus on the thoughts, emotions and behaviour patterns of the key protagonists, particularly with reference to their familial contexts and issues of identity. Emphasis has been given to the inclusion of their personal experiences to enable better understanding of the characters' worlds. In the third section or the conclusion the attempt is to reiterate the focus of the paper by revisiting the thematic thrust - understand the process of identity development as it unfolds during adolescence within the institution of family and its dynamics.

2. METHODOLOGY

Two works of fiction, which unravel the different strokes and of the effects of family environment on adolescent development, have been selected. The choice of fictional narratives was a potent means to steer away from the aridity of uni-dimensionality in the examination of issues pertaining to adolescents. Capturing the veiled psychological realities in an uninhibited fashion, a work of fiction brings to fore a gamut of emotions and feelings, unobserved and habituated realities. Moreover, for an in-depth engagement with different facets of adolescence and to localise it in the Indian cultural context, the works of contemporary Indian writers in English have been selected. It specifically involved identifying novels written by contemporary Indian novelists where the main protagonists were adolescents and family was a dominant context in which they lived and experienced the world. Identification of significant psychosocial issues, concerns, dilemmas, relationship matrices, patterns of family life, etc. were part of the preliminary exercise, aimed at ultimately to a more in-depth and holistic examination.

Of immense significance is the fact that adolescence cannot be looked at as an isolated phenomenon. It has to be understood in a continuum perspective, as located in the evolutionary framework marking the transition from childhood to youth. Stemming from the seminal work of Saraswati (1999; 2002) that the notion of several adolescences co-existing as a function of

contextual variations in socio-demographic factors has arisen and is now being extensively researched. Although this approach has painted many parallel portraits of the adolescent world, the concern is still largely with how the societal factors unfold to produce varied adolescent experiences. Thus moving on from universalistic to pluralistic understanding of adolescence, the research on Indian adolescents' highlights presence of variations on the basis of caste, class, gender, religion and ethnicity. In the essay, *Kaleidoscope of Adolescence; Experiences of World's Youth at the Beginning of the 21st Century*, Brown and Larson (2002) highlight its salience by using the metaphor of a kinescope to demonstrate the inadequacy that characterises churning together related but distinctive features of life for youth around the world and discerning a common image of their movement from childhood into adulthood. Thus, in the traditional Indian social matrix, adolescence rather than as a phase, manifests itself as a pattern of 'situations' characterising or guiding the passage from childhood to the adult stage.

Drawing from the diverse theoretical formulations, an eclectic framework has been adopted for analysing issues pertaining to identity and the role of the family in its construction. The conceptualisation of the transformation of self during adolescence as provided by Erik Erikson (1968) and the process of adolescent individuation as elaborated by Peter Blos (1962) are the two theories, amongst others, which constitute the framework of this analysis. Both theorists emphasise on the process of selection and internalisation from the environment to build up an integrated psychic structure. It is important that identity development is seen as a 'process,' connoting a constant interaction with one's environment that contributes to establishment of subtle differentiations of the self from the other.

The two novels chosen for the analysis are:

- Home by Manju Kapur: The novel unfolds against the backdrop of a joint family residing in Delhi. It is centred on the life trajectory of its twin adolescent central protagonists, Nisha and Vicky, striving for autonomy and confronting conflicts within a traditional joint family.
- S' Secret by Shobha De: The protagonist of the novel is Sandhya whose well-guarded secret is central thrust of the novel. Dynamics of a nuclear family, sibling relations and diverse vignettes of the life of an adolescent unfold in the narrative.

The analysis has been done broadly on the basis of the following two sub-themes.

- Unfolding of familial relationships

- Unravelling of the process of construction of identity vis a vis familial relations

3. ANALYSIS

The analysis of the two novels selected highlights the subtle diversity operative in the overarching divisions of the organisation of the family. It illustrates how identifiable structural divisions, namely joint family and nuclear family can be further differentiated within themselves to reveal the variations in their structures. This variation can be observed to be a dominant trend, indicative of the socio-cultural changes taking place. It also debunks the idyllic images of the Indian family. Also, the novels demonstrate and substantiate how the differentiations in the familial contexts become the primary sources in generating a wide array of adolescences in the Indian socio-cultural scenario. Socialization practices, guided by various external and intrinsic factors such as class, gender, value orientations, religion etc, account for a range of dynamic behavioural patterns and personality traits among adolescents.

The psychological impact of different kinds of familial structures and the networks of interaction and communication within the family such as parent-parent, parent-child and sibling engagements are significant to consider. Types of different family set-ups as identified in the novels are particularly noticeable. It is illustrated how significant socialization experiences lead to the internalization of values, attitudes and norms in society.

The dynamics of a joint family are characteristically highlighted in the novel *Home*. Visibly evident is the predominance of familial identity to that of the individual in the novel. It circumscribes and subsumes the individual to that of the collective identity. The relationships of economic interdependence are much more prominent rather than there being an emotional bonding between the subunits in the family. Also pertinent is the factor that there is constant strain of dis-ease and discomfort in collective living. Jealousy and intrigue dispel the idyllic frames of a joint family lifestyle. A contrast can be drawn with that of Rupa, the aunt's family – a nuclear family consisting only of husband and wife. The family functions more as independent subunits.

The role of the mother and the father in case of the protagonist in the novel *Home*, Nisha's upbringing is illustrative of how the norms of patriarchy that are upheld in the family are functional in this sphere too. The attempt in case of Nisha is that of over-socialization which backfires because she spends a considerable time span at her aunt's place where the experiences are different. Her aunt and uncle willfully agree to take care of her and are not only indulgent

but seek to focus upon the wholesome development of the child. Therefore she trusts and is more emotionally attached to her aunt than her mother. While there is an active interest in her academics on part of her uncle, in contrast, there is minimal evidence of a constructive role being played by her father with the exception of assistance and encouragement in starting a new business venture.

The character of Nisha in the novel, *Home*, demonstrates the development of gendered identity in a traditional family. Having spent most of her childhood at her aunt's place, she finds it extremely difficult to adjust to the ethos of her own home where her mother compels her to conform to a stereotypical feminine role. Her resistance accounts for generation of intrapsychic conflict and a fragmented sense of self. Attempts to emerge out of the miserable condition and carve a niche for herself are therapeutic for her and revitalize her. Reflecting on the same from an Eriksonian perspective, the negotiation of the crisis of the stage of identity formation is thwarted and there remains a gap in the achievement of an inner sameness and uniqueness.

Another facet of the familial relations that unfolds in the novel is that of a dysfunctional family. Nisha's cousin, Vicky, whose father is a drunkard and has the tendency of being violent, verbally and physically, are briefly hinted upon in the novel. Also the death of his mother, deeply distressful and anguishing, is etched deeply in his mind. This void finds expression in his behaviour in a few situations. With no means to communicate his agony, resorting to crying becomes a means to communicate and draw attention. The lack, transposed in the display of the affectionate bond, is extended towards Nisha. In case of Vicky, the inability to perform academically can be perceived to be symptomatic of the agony that he undergoes. Further, he perceives his initiation into the business as an opportunity to 'show everybody' what he was. It is an indicator of the will to enhance self-worth and self-esteem. This psychological need testifies to a tendency to define a separate identity for oneself, though realized in myriad forms, during adolescence. Presence of a substitute family is only a façade.

In the novel, *S's Secret* by Shobha De, the family on the surface is apparently well integrated, liberal and tolerant. What comes to fore as the novel unfolds is that the under the veneer of doting and indulgent parents, there are chasms which indicate the necessity of engaging in an unconditional fruitful dialogue and reassuring the children of a support, an emotional anchor with whom they can express and share without hesitation.

Interactions between the mother, father and children are manifest in different forms in the novel. Both remain preoccupied in their professional engagements, but there are different ways in which they spend time with their children. The father remains involved in Sandhya's passion for cooking, the mother attempts to have conversations and is not detached from life. In the case of Sandhya, one of her fundamental concerns is dealing with her younger sibling whose attitude she finds intrusive. Invariably it results in conflicts and fights between the two. The distress that Sandhya experiences are not addressed by the moralizing stances adopted by her mother. In case of Sandhya being the elder sibling, the degree of parental expectation registers an increase. Instance of sibling care, affection and solidarity is demonstrated when Sandhya writes a letter to her elder brother expressing her anguish over his smoking habit. It is important that he makes a confession to her before revealing the same to his parents.

The preference and leverage that is given to her brother is evident of his privileged status within the family. Academic excellence becomes the license to be casual and do anything that he wishes to do. The fact that both Sandhya and her brother, Siddharth hesitate to divulge to their parents their secrets, highlights that it is pertinent that the family functions as a supportive institution that oversees the development of the adolescent and not restrain it by overbearing expectations.

The novels thus highlight how parenting styles differ according to variation in the patterns of organization of the family. The context is an important determinant in the nature of experiences that are instrumental in shaping the identity of the adolescent. The norms and beliefs that are ascribed within the familial space, assume a significant role in decision making and exercising choices. Equally important is the negotiation of this ascribed identity when that which is secondary in the listing of agents of socialization, especially peers, assume greater prominence.

From the analysis it can be inferred that it is critical that the degree of emotional engagement of the mother and father, with the growing child and their contribution to his/her psychosocial wellbeing, have to be looked at separately. The novels showed a number of variations in this regard. The gender specific parenting vis-a-vis neutral upbringing of Nisha in the novel *Home*, the indulgent and caring attitude that Sandhya's parents have, though failing to create a congenial space for interaction because of its superficial nature, are some of the facets of the parent child relationship that have emerged from the novels. Of considerable

significance was the fact that nature of the parent-parent relationship cast an important influence on the development of the child.

From the standpoint of the role of the family, the intra-familial relationships that include the parent-child and the parent-parent interactions and sibling relationships are significant in the development of identity. The pattern of socialization that is predominant in the family guides the behavior, decision making and acceptance of roles. This may manifest itself in conformation or contravention to the ascribed position. Also, friendship dynamics are important concerns in this context that gain significance gradually. However this tendency cannot be generalized as it is contingent upon myriad interacting factors such as gender, class and family milieu.

Friendship functions as an important denominator in the development of a distinct sense of self. The emotional mooring that adolescents find in spaces beyond the contours of their families, is extremely significant, because they find a space for expression that cannot be realized within the family space. The process of individuation as described by Blos (1962) is illustrated characteristically in the delineation of the characters such as Nisha. These characters exemplify this phase as the novels depict their movement from childhood to adolescence and finally stepping into young adulthood. The progression is gradual and neither sudden nor linear in nature. The family plays an integral role in facilitating, or delimiting this transition.

Also a glance at the conflicts that emerge during adolescence are correlated with factors such as sexuality, differential parental opinion, peer approval/disapproval autonomous decision making, sibling relations, and stress over academics and career choices. While a few coincide with the Eurocentric formulations about adolescence, dilemmas emergent from class and gender orientations and the nature of the concern and efforts made to deal with them cannot be explained in a decontextualized manner.

The presence or absence of siblings plays a predominant role in the resolution and aggravation of the conflicts and dilemmas confronted by adolescents. Adjustments to the presence of a sibling, as illustrated in the unfolding of the narratives, are seminal. Also, a range of factors within the family are preponderant in the shaping of relationships with siblings. Sandhya's childhood experiences in the novel *S's Secret* are a telling instance of the characteristic influence that sibling relationships have on the shaping of identity. For instance, her habit of sharing her feelings by talking to the moon, indicate how neglected she felt when all attention was focused on her baby sister and her elder brother. Such fantastic and imaginary

creations are reflective of the cocooned inner world, intrinsic to the sustenance of the self because it has a cathartic effect and enables venting out emotions to maintain a sense of harmony and balance.

Her sensitive and caring attitude and kinship bonding, is the hallmark of her personality and comes to fore on several occasions. The gendered upbringing is subtly operative in the novel. In comparison to her brother, Siddharth, she is overwhelmed with guilt for her transgression. While her brother is a little nervous about his smoking habit, he is certainly not as frantic as his sister about her secret. This also functions as a significant factor in shaping identity.

It surfaces that there are strong internal private worlds inaccessible to the people around them. They struggle to keep harmony and consonance between the frictions and imbalances that arise from their environments. In the delineation of characters, one also comes across the oscillation between childhood preoccupations and emergent concerns of adolescence with respect to sexuality, peer associations, parental relations, strivings for autonomy etc.

The development of an independent sense of self is manifested in autonomous decisions, emergence out of the conventionalities of expected roles through negation of dictums, strivings for independent spaces, rebellions against imposed decisions, pursuit of passions that are antithetical to dictates of family members, etc. This is portrayed through the medium of various characters whose trajectories seem to coincide at a particular point. It portrays that there are junctures when the definition of 'who I am' is both tangential to and coinciding with the sense of 'we.' This echoes the Eriksonian framework where the stage of identity vs. role confusion involves resolution of a crisis that entails selection and internalization from the environment to build an integrated psychic structure. It is also intertwined with the notions of self-worth and self-esteem. The role of the family in enabling or disabling this pursuit is important, as illustrated through the various characters in the novels.

4. CONCLUSION

The seminal concern that emerges from the analysis is that to support the emotional well-being of the adolescent the family can provide a conducive and congenial space for development. For instance excessive or obsessive monitoring especially during the phase of transition from childhood to adolescence delimits the possibility to explore and experiment at this life stage. Within the Indian context, in order to form a unified sense of self, there are various

impediments based on variables such as class and gender that tend to obstruct the process of exploration among adolescents. Also significant is the fact that parental decisions are not thrust upon the adolescent. Rather, the strivings for autonomy need to be respected and valued. Issues such as sexuality and experimentation must be addressed by developing a rapport.

It is also important to note that the school, another significant space for socialization, does not function in a vacuum or in isolation from the family. Behavior of the child, academic performance, attitudes and values are influenced by the familial environment that he/ she has been subject to. The school should not be delimited to just academics; rather it should play a constructive role by interacting with the parents regularly. It should play a productive role and adopt an interventionist stance with respect to the issues confronted by the growing child.

It brings to fore fundamental adolescent issues that need to be incorporated under the purview of adolescence education. These include making the adolescent aware of the psychological dimensions of the physiological changes taking place during this phase, adjusting to conflicting demands from the environment, being assertive, facilitating them in coping with the stressors emergent during this stage with respect to academics, parental conflicts, peer dynamics, and inculcating decision making abilities, etc. Also of fundamental importance is the fact of how these issues are addressed. Adopting a moralising stance to the same or dealing with them in an isolated manner does not facilitate the achievement of intended goals. Rather, to conclude, it needs to be dealt by generating a dialogue that augments the possibility of the interaction and expression.

REFERENCES

- Blos, P. (1962). *On Adolescence: A Psychoanalytic Interpretation*. New York: The Free Press
- De, S. (2011). *S's Secret*. New Delhi: Popular Prakashan Pvt. Ltd.
- Erikson, E. (1963). *Childhood and Society*. London: Imago Publishing co Ltd.
- Kakar, S. (1982). *The Inner World: A Psychoanalytic Study of Childhood and Society in India*. Delhi: Oxford University Press.
- Kapur, M. (2006). *Home*. New Delhi: Faber & Faber.
- Larson, R. W. & Brown, B. B. (2002). *The Kaleidoscope of Adolescence: Experiences of World's Youth at the Beginning of the 21st Century*. In B. Bradford Brown, Reed W. Larson, T.S. Saraswathi (Eds.). *The World's Youth: Adolescence in Eight Regions of the Globe* (pp. 1-20). Cambridge: Cambridge University Press.
- Ramanujan, B.K. (1979). *Towards Maturity: Problems of Identity Seen in the Indian Clinical Setting*. In Sudhir Kakar (Ed.). *Identity and Adulthood* (pp. 37-55). New Delhi: Oxford University Press.
- Ranganathan, N. (2009). *Changing Contours of Family dynamics in India: A Perspective*. National Conference of the title 'India on the Move.' University of Mumbai.
- Saraswathi T.S. (1999). *Adult Child Continuity In India: Is Adolescence a Myth or an Emerging Reality?* In T.S. Saraswathi. *Culture, Socialization and Human Development: Theory, Research and Application in India*. New Delhi: Sage Publications.
- Singh, D. (2012). *The Sacred Grove*. New Delhi: Harper Collins.
- Verma, S. Saraswathi, T.S. (2002). *Adolescences in India: Street Urchins or Silicon Valley Millionaires*. In B. Bradford Brown, Reed W. Larson, T.S. Saraswathi (Eds.). *The World's Youth: Adolescence in Eight Regions of the Globe* (pp. 105-140). Cambridge: Cambridge University Press.

Diversity, Marginalization and Schooling

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ABSTRACT

A reality often ignored in education, is that of a heterogeneous classroom. In the contemporary world, it is imperative to acknowledge that classrooms are not homogeneous groups, but one of students coming from diverse socio-cultural backgrounds. Inclusive education addresses the diverse needs of students in a classroom. It strives to provide education to all, especially those who have been excluded from education, in the same classroom. It is also important to recognise that there exists a web of complexities which need to be addressed by researchers and practitioners constantly in the endeavour to make inclusive education a reality. This paper attempts to understand the experiences of those who have been excluded and marginalised from education. It analyses the various issues and concerns in educating the marginalised. It would also help inform and prepare teachers and schools against discrimination and exclusion. The paper raises questions about equity, equality and diversity that warrant reflection.

Keywords: Marginalisation, Education, Schooling

1. UNDERSTANDING MARGINALIZATION: AN INTRODUCTION

In India, the domain of schooling is reflective of the privilege of the elite where the members of the upper caste and class have enjoyed the right to education, depriving the masses of this fundamental freedom. Masses of children are starved of the basic right to education for the sheer reason that their parents cannot pay for school. According to the UNESCO, Education for All, Global Monitoring Report (2010), "Marginalization in education can be understood as excessive and endless disadvantage in education that sets some groups and individuals apart

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from the rest of society.” As a result, they are less likely to enter school, to start school at the appropriate age or to complete a full round of education, and they are more likely to leave school with lower levels of achievement. As well as being a sign of social deprivation in its own right, disadvantage in education is a cause and an effect of marginalization in other areas and a powerful transmitter of deprivation across generations. According to the EFA Global Monitoring Report 2010, *Reaching the Marginalised*, “Marginalization in education is a form of acute and persistent disadvantage rooted in underlying social inequalities”. This paper is an introductory piece highlighting the concept of marginalization and its relationship with education. The paper begins with building a background of marginalization in education in India with a focus on the Dalits and Adivasis. The following segment focuses on the discrimination faced by the marginalized communities in India especially in the field of education. The third segment is a theoretical segment where several issues such as equity and equality have been debated in the light of marginalization. The final segment is the conclusion which highlights efforts which can be made at an individual as well as a collective level to battle marginalization in education.

Despite the fact that all countries ratify the principles of equal opportunity and universal rights, research shows that, when it comes to opportunities for education, some people are more equal than others – the marginalized being the least equal of all. Inequalities linked to parental income, gender, ethnicity, race and other factors continue to confine life chances and intensify marginalization.

Social and cultural barriers to education form another forbidding hindrance. In our country, the education of girls is widely alleged as being of less value than that of boys, with traditional practices such as child marriage adding another layer of disadvantage. Members of ethnic minorities often face deeply embedded obstacles to equal opportunity. Starved of an opportunity to learn in their own language and faced with social stigmatization, they are set on an early path to disadvantage. Unfortunately none of these disadvantages operate in isolation. Poverty, gender, ethnicity and other aspects interact to create corresponding and emphasizing layers of handicap that limit opportunity and hinder social mobility. Velaskar (2010) argues that in India “Children face several atrocities; girls are traumatized by sexual harassment, dalit children by caste atrocities and minorities by pedagogies of hate.”

Elitist nature of education in India can be traced by to the Vedic times when education was restricted to the upper castes and was also given by the higher castes in Sanskrit (Pathak,

2013). Even during the colonial times education played a key role in the legitimization of colonialism. The British argument of “civilizing mission” where in they believed that in order for India to come out of the dark ages it must educate the masses and thereby imposed the British system of English education, which was successful in creating a class of obedient servants who lacked confidence and faith in themselves and started believing in a cultural superiority of the British. According to Pathak (2013), the main problems that we face today, of inequality in education, lack of access to education, poor quality of education, poor enrolment ratio of education can all be traced back to the faulty practices of the Western education policy of the British. Pathak argues that arrogance (of the middle and upper classes) became a by-product of modern western education.

Post-independence, despite the egalitarian stance of our Constitution, there exist several inequalities within the school system. These inequalities have further reinforced marginalization within the school framework. There exists a duality within education where elite schools exist for the children of the affluent and poor quality government schools for the rest. According to Kumar (1992) this is a process of “sponsored upward mobility” which privileges the affluent and ensures their success always. Kumar argues that this form of exclusive education cannot be conducive to the aspirations of a democratic and egalitarian society. Instead it breeds elitism and reinforces the existing inequality. In the words of Beteille, (2001) “There is a close but complex relationship between occupation and education in all modern societies...The expansion of education leads to the creation of new opportunities although not all members of society can benefit from those opportunities or benefit from them to the same extent, hence education can also be a source of inequality. This point hardly needs emphasis in a country like India where even elementary education, not to speak of higher education, is outside the reach of large masses of the population. Even in those countries where elementary education has become universal, not everyone can expect to go to the same kind of institution for secondary or higher education”. To this Nambissan (2013) argues that in India the learning context in schools is rendered complex not merely by the fact that it is mediated by class and power relations but because there are intersections with caste and Adivasi and minority status as well as gender factors which influence access to social and cultural resources in diverse ways. She argues that poverty as well as caste and ethnicity are seen as enduring constraints to the access and progress of children in schools. The increasingly stratifying nature of the education system and unequal schooling act as a key factor in the reproduction of inequality and marginalization in India.

2. MARGINALIZATION AND DISCRIMINATION

Inequality and marginalization have taken the form of discrimination against the disadvantaged section of society which includes scheduled caste (SC), Scheduled Tribes (STs), other backward Classes (OBCs) and the Economically Weaker Section (EWS). Discrimination can be understood as an action that treats people unlawfully and unfairly because of their affiliation to a particular social group. Discriminatory behavior takes many forms. However, all forms of discrimination are exclusionary or rejecting in nature.

Wankhade (2013) examines the various forms of discrimination (primarily based on caste) which exist in Indian society. Also he points out that this discrimination could take a direct or an indirect form.

Caste intensified discrimination- by virtue of birth in upper caste, an individual enjoys a higher social status, more economic power and carries inherent cultural capital and uses all this against individuals born in lower caste.

Caste specific discrimination – based on cultural norms, belief practices and customs, derives its legitimacy from principles of caste and religion. For example scavenging, shoe making, hair cutting are considered impure and are performed by lower caste.

Caste imposed discrimination – caste inequality has been socially constructed through age old norms and customs and practices to project social and political interests. These groups try to dictate and impose their own world view, their practices, beliefs, and customs on other depressed groups.

Self -imposed caste discrimination- members of lower caste have internalized caste inequality and consider their position divinely given and they willingly submit to the dictates of the upper caste.

Although literature based on developing countries has highlighted the role of schools and teachers in promoting marginalisation in education, much of such evidence is anecdotal. In India, qualitative research presents a dismal picture of the sufferings of Dalit and adivasi children. In one study, a school teacher from a Dalit background recalled, “We were asked to sit separately. Our copy or slates were not touched by the teachers”. (The Probe Team 1999) Dalit homes are mostly located outside of the main village and thus children from Dalit background have lesser access to schools. In a village in Tamil Nadu, it was observed that

“None of the Scheduled Castes were even allowed to walk through the residential areas of the dominant castes or through the village’s main street running through the residential areas of the dominant castes. They had to walk a long way along the periphery of the village to reach their huts.” (Nambissan and Sedwal, 2002) Further, teachers also tend to behave inappropriately, often humiliating students from a Dalit background. It has also been seen that teachers from an upper caste background tend to have lower expectations from students from Dalit background and consider them ‘dull’ and ‘uneducable’ (The Probe Team 1999). The UNICEF Report On Inclusive Classroom, Social Inclusion/Exclusion and Diversity: Perspectives, Policies and Practices reports that “Children have narrated painful stories of their experiences in the classroom and shown their resentment to this, as well as towards the teachers (Probe Report, 1999; Nambissan, 2001; Govinda, 2002).” In a personal observation and discussion with teachers of several private schools of Delhi it was seen that teachers are often insensitive to the needs of the children with special needs. Even minor things like refusing to eat from the tiffin of a slum child can have an impact on the impressionable mind of the child. Nambissan (2013) also points out that, teachers from upper caste are indifferent to the needs of the children from the Dalit community. In her experience she notes that this leaves the dalit student bereft of the love and care he deserves from his teacher. The Dalit student finds himself excluded because of the lack of involvement of the teacher.

"They come to school without brushing, in dirty clothes", "living under one room with parents, they are born characterless", "they are caretakers of younger siblings", "most of them work for a living", "and they show risky behavior and at times intimidate teachers". These are some of the observations made by government school teachers as quoted by Indian Express Chandigarh, in July 2013.

This recent example is a clear example of the concerns of teachers which also impacts their attitude towards the children with special needs.

In an NGO based report titled *The urban irony of education as a right*; a case study on education in a slum in Delhi explains why there were so many dropouts, "The parents and children are scared to talk to their teachers in school. If they have doubts understanding what is being taught and try to express this to their teachers, they are scolded or asked to leave the class because the teachers do not like to be challenged. They are afraid of the teachers. And so are the parents. They worry that if they complain about teaching standards their child will be

thrown out of school." Again the onus is on the teacher in this case. Students and parents are afraid to speak and interact with the teacher which reflects the attitude of the teacher.

Children have also reported experiencing violence at the hands of teachers and classmates from dominant castes. Dreze and Gazdar (1996) in their study on a village in Uttar Pradesh reported that teachers refused to touch Dalit students. Students reported being subjected to verbal abuse and physical punishment by teachers, and also being beaten up by upper-caste classmates. Dalit students feel like outsiders and inferiors in every day affairs which even leads to suicides by Dalit students just to save dignity (Sukumar, 2008). Individual choices like dressing style, the kind of footwear, language skills, fluency in speaking English all lead to an inferiority complex. Research studies also found that Dalit children made to work in school; there were mainly two types of tasks assigned to the students by the teachers. Those which were refined and related to school activities such as participating in and leading the morning assembly, representing the school were done by upper class section while jobs like cleaning the playground, mid-day meal utensils, toilets were done by students of the disadvantaged class/caste (Ramchandaran and Naorem, 2013; Nambisaan 2009).

Adivasis also suffer from similar low expectations. In addition, they face some additional issues as well. Their geographical location is often inaccessible as they live in hilly regions or forests. Demographically, tribal habitations are small and do not have a dense population. This translates into a lack of infrastructural facilities, including schools and roads. Even when schools are within walking distance for students, during monsoons, roads become impassable. Teachers, who tend to live in large town, tend to unofficially close the schools as it is difficult for them to reach schools at such times. Language poses another major challenge for tribal education. They tend to have local dialects and often do not speak the main state language. Thus, students from tribal backgrounds tend to feel further alienated as many of the teachers are not proficient in tribal dialects. Language spoken by the teacher/ medium of instruction is often different from the vernacular language spoken which makes it extremely challenging for the student to perform well in class (Ramchandran & Naorem, 2013).

Languages have been associated with task and class. The elite prefer the use of English as their first language and completely discard and disregard their vernacular language and feel that other languages are for trivial tasks and must be left to be used by the lower classes (Mohan, 2014) For greater social mobility the disadvantaged feel the need to learn the English language which is a major challenge as they are mostly first generation learners and studying

in English medium becomes extremely challenging. Teachers find it difficult to translate English words to Hindi words, as the children have no concept of it. In the primary years, children of the disadvantaged section are at a great loss due to their inability to grasp the language, which in turn makes them feel deficient and unintelligent.

These children experience exclusion as an individual and personal failure (Sukumar, 2008); first generation learners from marginalized disadvantaged communities, not only lag behind curriculum requirements, but also face entrenched pedagogical practice. Teachers interact with students who speak well and are conversant in English, which further alienates marginalized students and excludes them, making it a vicious cycle. Most teachers believe that students of marginalized section do not find education important and therefore do not perform well. Absenteeism and irregularity amongst children also meant that the students were unable to keep pace with learning (Ramchandaran & Naorem, 2013)

With respect to the adjustment of the socially marginalized section (especially dalits and adivasis) in inclusive schools it has been revealed that in the classroom, curriculum delivery and pedagogy in government schools in India, children belonging to marginalized communities, are subjected to discrimination and humiliation. This has an impact on their self-respect and self-confidence. Caste and class based marginalization can also take the form of labelling and stigmatization. Rao (2013) argues that stigmatization is the situation of the individual who is disqualified from full social acceptance that leads him to experience discrepancy between the actual and imagined identity, which may impact the presentation of his own self in society. This discrepancy, when known about spoils his social identity, it has the effect of cutting him off from society and from himself so that he stands a discredited person facing an unacceptable world. Stigmatization often leads to uneasiness; cowering, self-exclusion which other researchers argue also leads to academic failure and lack of social adjustments. In a case study based on the IIT JEE, he illustrates with several examples where and how discrimination takes place. He highlights the fact that even the entrance forms are colour coded which is the first form of stigmatization. As the students enter the classroom they are constantly reminded of their caste identities and labelled. These labelled students find it even more difficult to interact with the advantaged students and end up grouping amongst themselves. There are very few exceptions to this grouping pattern and may occur only when a Dalit student excels in sports or co-curricular activities. He shares several instances of SC students been discriminated against ... sometimes to the extent that they have left the institution as they could not bear the stigmatization. He argues that the policies and practices that identify

recognize and label students within academic and non-academic contents of the institution are detrimental to academic success and social adjustment of SC/ ST students.

Marginalization can also take the form of symbolic violence. Bourdieu (1998) defined symbolic violence as an extension of the term violence to include other forms of violence. According to Bourdieu, symbolic violence is an imposition of systems of symbolism and meaning upon groups or classes, accepted as legitimate. It is related to various modes of social and cultural domination. Symbolic violence is the unnoticed (partly unconscious) domination that people maintain in everyday living. Because symbolic violence is practiced and repeated in everyday life, people do not realize that certain acts or attitudes contain symbolic violence. He further states that symbolic violence is a soft violence applied by subject to other subjects. Symbolic violence is repeated from time to time through education in the family, formal schooling or informal learning. Bourdieu (1998) used the term "symbolic violence" to describe how the ideas and values of a ruling cultural class are purposefully imposed (often through subconscious means) onto a dominated social group. Culture plays a role as maintenance of the power relations. He claimed that culture contributes to the systematic reproduction of symbolic violence.

Another perspective to marginalization stems from Michael Apple's concept of hidden curriculum. In *Official Knowledge* (1993), Apple maintains that textbooks represent a "selective tradition": "someone's selection, someone's vision of legitimate knowledge and culture, one that in the process of enfranchising one group's cultural capital disenfranchises another's. Apple refers to the process of depriving a particular group of privilege and power, while simultaneously enhancing the privilege and power of another group. He suggests that this happens through the preservation of a curriculum that reinforces the knowledge and culture of a particular population while concurrently ignoring the knowledge and culture of other populations. Apple further goes on to state that curricula aren't imposed, but rather negotiated, as non-dominant groups struggle to be heard. What tends to occur through this process of deliberation and negotiation is that the knowledge and perspectives of marginalized groups are included but become marginalized.

3. EQUITY OR EQUALITY: A RESPONSE TO MARGINALIZATION

The response to this inequality and marginalization of the disadvantaged section has led to the emergence of a debate between equity and equality and equality and universality. What do we want in this country? Do we want equal rights for all citizens? Do we want a just treatment for

all citizens? Is it possible to give justice and equal chances to all? Equity in education is a measure of achievement, fairness, and opportunity in education. Equitable education systems are fair and inclusive and support their students to reach their learning potential without either formally or informally pre-setting barriers or lowering expectations. Equity as fairness implies that personal or socio-economic circumstances, such as gender, ethnic origin or family background are not obstacles to educational success. An equitable education system can amend the effect of broader social and economic inequalities. In the context of learning, it allows individuals to take full advantage of education and training regardless of their background. Instead of acting as mechanism to transmit social injustice, education should act towards promoting equal opportunity and social mobility. The efforts of governments ratifying equal opportunity principles, reaffirming human rights commitments and signing up for international summit statements on education is not enough. Overcoming marginalization requires concrete policies that address the underpinnings of inequality perpetuating marginalization – and it necessitates political leaders to recognize that marginalization matters.

It is in the light that right to education is now a fundamental right under Article 21 of the Indian constitution. The Right to Education Act (RTE), enacted in 2009, has piloted a hope for school education in the country. It is the culmination of efforts made by educationists, members of civil society and judiciary for the last many years. Free and compulsory education for all children had been deliberated even in pre-Independence years. It made its way into the Constitution as a Directive Principle of State Policy under the former Article 45, whereby states were required to ensure provision of free and compulsory education (FCE) to all children till the age of 14 years within a period of 10 years of the formulation of the Constitution. There is enough evidence to suggest that this goal has not been achieved even several decades after India became independent. With the RTE coming into force, there is an expectation that this will finally be translated into provision of quality school education for all children. It is the primary responsibility of the Government to ensure implementation of the Act. The RTE Act is in consonance to the National Curriculum Framework 2005, which placed “an urgent need to understand children in their social, economic and cultural contexts and also to organically link the teaching learning practices and processes to broader social reality in order to make classrooms inclusive.” Inclusion in education also acknowledges diversity and differences among students as an important resource and opportunity for enriching learning. Inclusion promotes every child's participation in the teaching-learning process as well as the participation of communities in the schooling processing order to benefit all learners. At the same time, it

combats exclusion by reserving a special lens to promote the participation of children and communities from socially excluded and vulnerable communities. Ultimately, social inclusion is about transforming school systems and the learning environment in order to respond to the diversity of learners.

Inclusive education refers to the education of all children in mainstream schools within their local community (Udvari-Solner & Thousand, 1995). According to the Salamanca Statement (UNESCO, 1994), inclusive schools “are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all.”

The most important aspect of an inclusive classroom is an emphasis on the building of cohesive cultures around values and practices that respect diversity and multiculturalism. According to Mahajan (2010), “The concept of multiculturalism endorses the idea of difference and heterogeneity that is embodied in the concept of diversity.” He further argues that the concept of multiculturalism contributes to the agenda of democratisation and non-discrimination. He establishes that the idea of multiculturalism locates cultural identity as a source of discrimination in society. Second, he contends that equality for diverse cultures necessitates a system of special, group-differentiated rights. Unlike liberals who defend universal citizenship and equal rights as the most suitable instruments for countering community based discrimination, multiculturalists believe in granting special group rights for vulnerable minorities. This concept of multiculturalism in society holds true for multicultural classrooms as well. Educationists today believe that diversity needs to be respected and treated equally and hence promotes and supports reservation for the marginalised sections of the society.

However reserving seats (as proposed by the RTE and scholars like Mahajan) for the marginalised is no single formula or blueprint for overcoming marginalization in education. Policies need to address underlying causes such as social inequality, gender disparities, ethnic and linguistic disadvantages, and gaps between geographic areas. In each of these areas, equalizing opportunity involves redressing unequal power relationships. The inequalities that the marginalized face start in early childhood and continue through school age years. They are deeply engrained and highly resistant to change. Yet progress is possible with sustained political commitment to social justice, equal opportunity and basic rights.

The EFA Global Report on Reaching the Marginalised (2010) validates that removing school fees is imperative to make education more accessible for the poorest, but is not adequate to remove cost barriers. Indirect costs often termed as hidden costs associated with uniforms, textbooks and informal fees need to be lowered as well. Bringing schools closer to marginalized communities is also essential, especially for gender equity. Physical accessibility to schools has been a persistent problem for India and the government needs to construct schools in each community, village such that quality education can reach the masses.

4. AN EFFORT TO MARGINALIZATION

However getting marginalized children into school is just a first step. Ensuring that they receive quality education poses significant policy challenges. One of the areas which needs our attention is the fact that schools in deprived areas fail to draw qualified teachers hence making the cycle of marginalization vicious. Reforms in classroom teaching firstly require a need to respect the local language of the marginalised children and continue teaching in a bilingual mode so as to include all the students equally. Ensuring that children enjoy opportunities for learning in an inclusive environment requires changes in attitude, backed by investment in teacher training and learning equipment.

It is necessary therefore to increase the amount of time students spend with their teachers. Several non-academic activities may be organized for students and teachers together to enhance and improve this relationship. According to Artiles and Kozleski (2007), “The interaction between and among teachers and students is crucial in helping students develop, practice, use, and construct knowledge in informal situations. In this kind of classroom, opportunities to learn are facilitated by a sense of shared aspirations, supportive relationships between and among students and teachers, a community focus on local complexities, the development of tools for inquiry, and other features of a community linked together in purposeful learning.” Schools should encourage teachers, parents, and administrators to form collaborative teams to work together on comprehensive plans for students of the diverse abilities and develop school-wide systems that reward positive behavior. Teachers teaching students of the marginalized section should provide more than a warm and caring social environment. They must be attuned and responsive to the individual cues and needs of students in their classrooms; thereby teachers in inclusive classrooms must be most sensitive to the special needs of the child. Highly sensitive teaching requires teachers to pay keen attention to, process, and respond to a lot of information simultaneously. In an inclusive classroom where

students of the marginalized section hesitate in expressing their point or fail to understand a topic, the teacher must be able to identify and immediately react by helping and motivating the child to learn. She may, for example, change the tone of her voice to reengage those students not participating, take a quick moment to restate her question in simpler language.

Since, teacher is an indispensable element in the process of teaching learning, proper education and training of the teacher is most important. The range and complexity of changes taking place in the field of special needs implies transformation of teacher training curricula. Hence, the agenda for teacher education programmes must be to groom and train, provide practical experience and support each teacher to work with special needs children. Teachers in inclusive classrooms should have effective communication skills; good inter personal skills (sharing, leadership, conflict resolution etc.); adequate problem solving skills; & technical skills (behaviour analysis, assessment, individualized instruction etc.) A part of the teacher training must also address the realities of everyday interaction in any given classroom. A heightened awareness of, and the understanding that in the school setting situations arise where they [the teacher], must diffuse conflict, empathize with individual needs, provide emotional security, and more importantly, a sincere desire to interact with students must be imparted in teacher training. Teacher education programs must be designed to prepare teachers for greater social and cultural diversity than they typically experience in university classrooms.

Strategies such as co-teaching could also be applied to such inclusive classrooms. Co-teaching commonly results in a teacher teaching and the others supporting and (possibly other related-services staff) sharing the teaching responsibilities within a classroom to include children with and without identified special learning needs. First, the teachers engage in co-planning, making decisions together on the content that will be presented and the accommodations that will allow students with and without special needs to access the knowledge and skills embedded in each lesson. During instruction, co-teaching could be demonstrated in one teacher teaching and the other supporting. This strategy would help in reducing the burden of a single teacher and also ensure a better teacher student ratio such that students would get more and more individual time with the teacher. Along with this teachers also need greater flexibility and autonomy in their day to day transaction. It is often seen that the burden of completing the curriculum and the rigidity of the curriculum can make it difficult for teachers to spend time on explaining it to the diverse abilities of children. Hence inclusive classrooms require teachers to have greater autonomy and flexibility.

Teaching is a multifaceted profession, but, the most important responsibility a teacher has is to demonstrate a sincere interest in the students. It is only with a better student teacher relationship that the goal of inclusive education be fulfilled. Since the art of teaching is based on a strong foundation of social skills, the educator must be consciously aware of social interactions and the impact of those actions. Every teacher must be sensitive to the needs of the students of the marginalized section and help them adjust in the new environment. A little word of praise and encouragement could do wonders for the students from the disadvantaged section. Educators, must also, create an environment that allows them to get to know the students, and one that demonstrates a sense of safety and security. They must try and make sure that all the students are also sensitized to the needs of the other students which would facilitate the whole process of inclusion. Conclusively one may say that a little warmth and love in a student teacher relationship and a change of attitude is definite to make our inclusive classrooms truly inclusive in nature- reaching the finale of the spectrum where marginalization would finally be bridged.

REFERENCES

- Apple, M. (2000) *Official knowledge: Democratic knowledge in a conservative age*. 2nd edition. New York: Routledge.
- Artiles, A J. and E Kozleski. (2007) *Beyond convictions: Interrogating culture, history, and power in inclusive education*. Language Arts Background paper prepared for the Education for All Global Monitoring Report 2005. The Quality Imperative Quality of education at the beginning of the 21st century: Lessons from India. Accessed from: <http://unesdoc.unesco.org/images/0014/001466/146663e.pdf>
- Beteille, A. (2001). Equality and Universality. *Economic and Political Weekly*, 36-38 3619-25.
- Bourdieu, P.(1986) *The forms of capital in Richardson, J., Handbook of Theory and Research for the Sociology of Education (1986)*, Westport, CT: Greenwood.
- Dreze, J., Gazdar, H., (1996). Uttar Pradesh: the burden of inertia. In: Dreze, J., Sen, A (Eds.), *Indian Development*. Oxford University Press, New Delhi.
- Kumar, Sanjay (2010). *Report On Inclusive Classroom, Social Inclusion/Exclusion and Diversity: Perspectives, Policies and Practices*. Deshkal Publication.
- Mahajan, G. (2010) *Responding to Identity Conflicts: Multiculturalism and the Pursuit of Peaceful Co-Existence* *Peace Prints: South Asian Journal of Peacebuilding*, No. 3, Vol. 2: Winter 2010.
- Mohan, P. (2014). *The Road to English Slow Migration of the Economically Weak Child to Elite India Higher Education in India*, 19–24.
- Nambissan, G, Rao, S. Ed (2012) *Sociology of Education in India: Changing Contours and Emerging Concerns*. Delhi: Oxford University Press.
- Pathak, A. (2013) *Social Implications of Schooling: Knowledge Pedagogy and Consciousness*. Delhi: Aakar Books
- Ramchandaran, V. & Naorem, T. (2013) *What It Means To Be a Dalit or Tribal Child in Our Schools A Synthesis of a Six-State Qualitative Study*. *Economic and Political Weekly*, Vol. XLVIII, No. 44 (Nov. 2, 2013): 43-52.
- Rao, S. (2012) *Structural exclusion in everyday institutional life: Labelling of stigmatized groups in an IIT*. In G. Nambissan, & S. Rao (Eds) (2012) *Sociology of Education in India: Changing Contours and Emerging Concerns*. Delhi: Oxford University Press.
- Shukla, S, Kumar, K. Ed (1985): *Sociological Perspectives in Education: A Reader*. Delhi: Chanakya Publications.

- Sukumar, N. (2014). A Concept : Semiotics of Living Exclusion Every day, 43(46), 14–17.
- Udawari-Solner,A & Thousand (1995) effective organisation , instructional and curricular practices in inclusive schools and classrooms.’ In C Clark, A Dynon and A Milliward (eds) *Towards Inclusive schools?* London: David Fulton.
- UNESCO (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. Paris: UNESCO.
- UNESCO (2010). *Reaching the Marginalised, Education for All, Global Monitoring Report*. France: United Nations Educational, Scientific and Cultural Organisation. Accessed: <http://unesdoc.unesco.org/images/0018/001866/186606E.pdf>.
- UNESCO Associated Schools Project Network (2004) “Breaking the Silence”: The Transatlantic Slave Trade Education (TST) Project, *Diversity in all: Mobilizing schools against racism, discrimination and exclusion equal*.
- UNICEF (2010) *Report on Inclusive Classroom, Social Inclusion/Exclusion and Diversity: Perspectives, Policies and Practices*.
- Velaskar, P. (2010). *Quality and Inequality in Indian Education: Some Critical Policy Concerns* 1, 7(1).
- Wankhade, G.G (2013) *Caste & Social discrimination: Nature Forms and consequence in Education*. In G. Nambissan, & S. Rao (Eds) *Sociology of Education in India: Changing Contours and Emerging Concerns*. Delhi: Oxford University Press.

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